FOUNDRY TRADE JOURNAL

EST. 1902

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NOVEMBER 24, 1960

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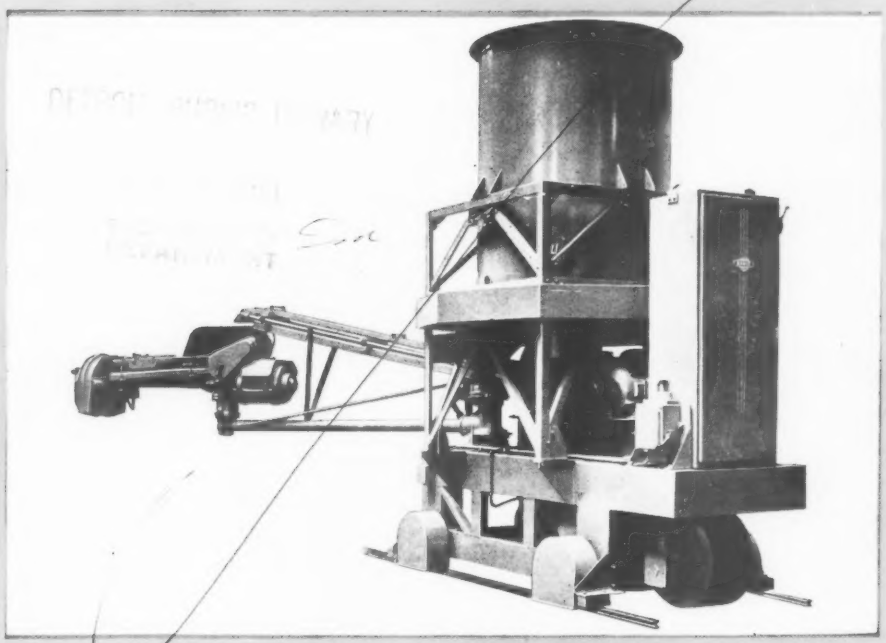

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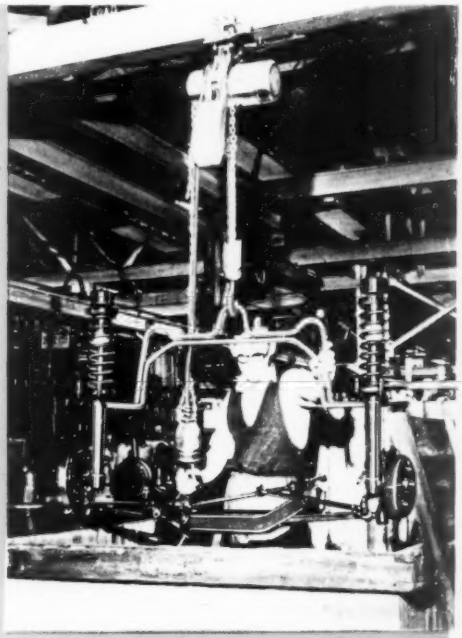

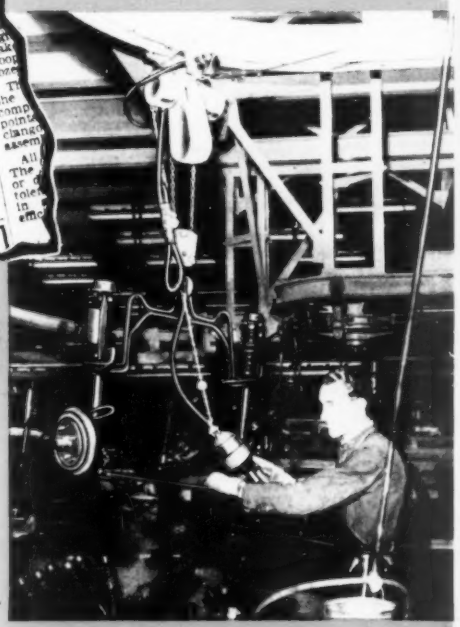

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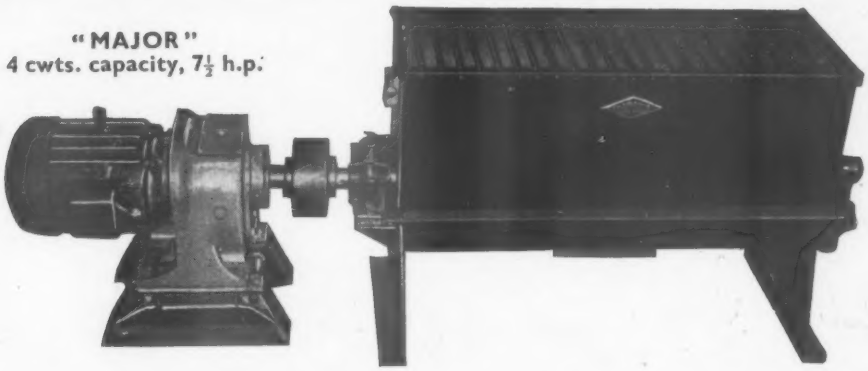

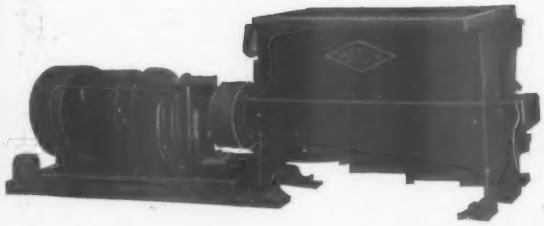

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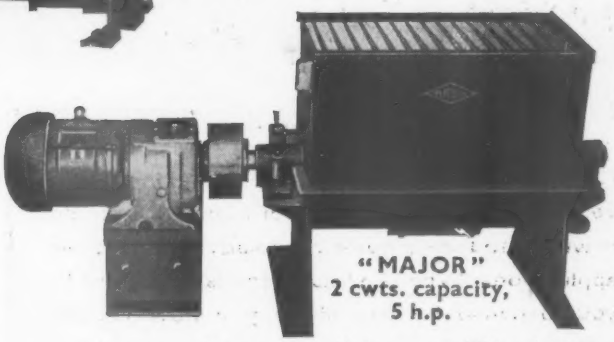

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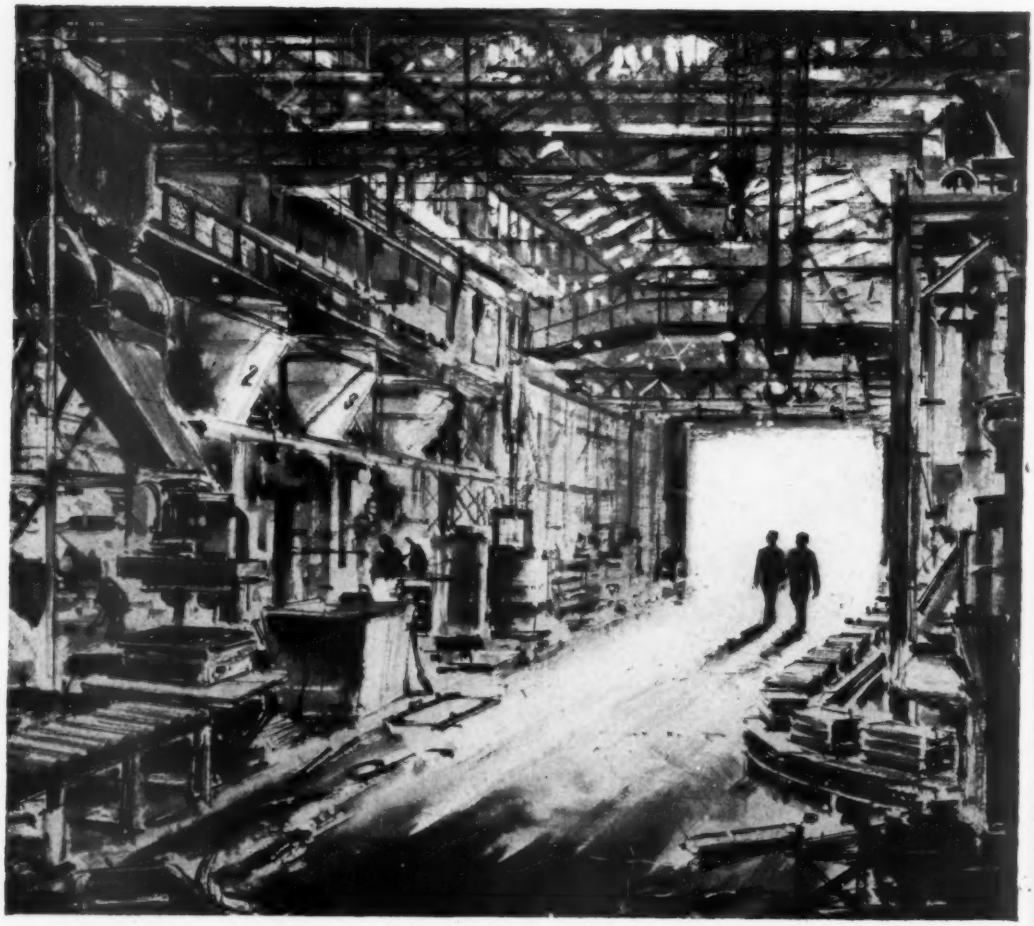

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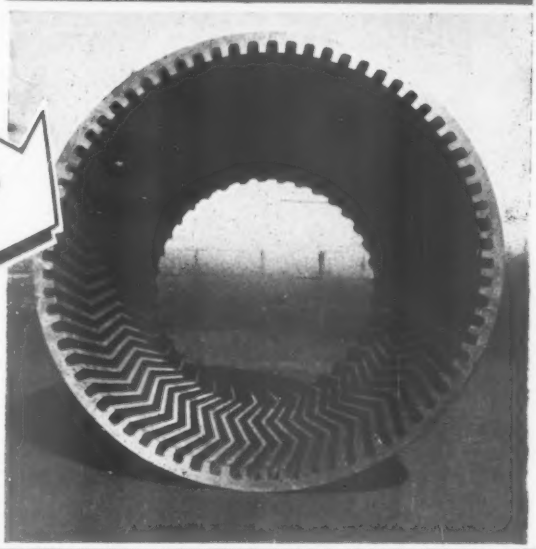

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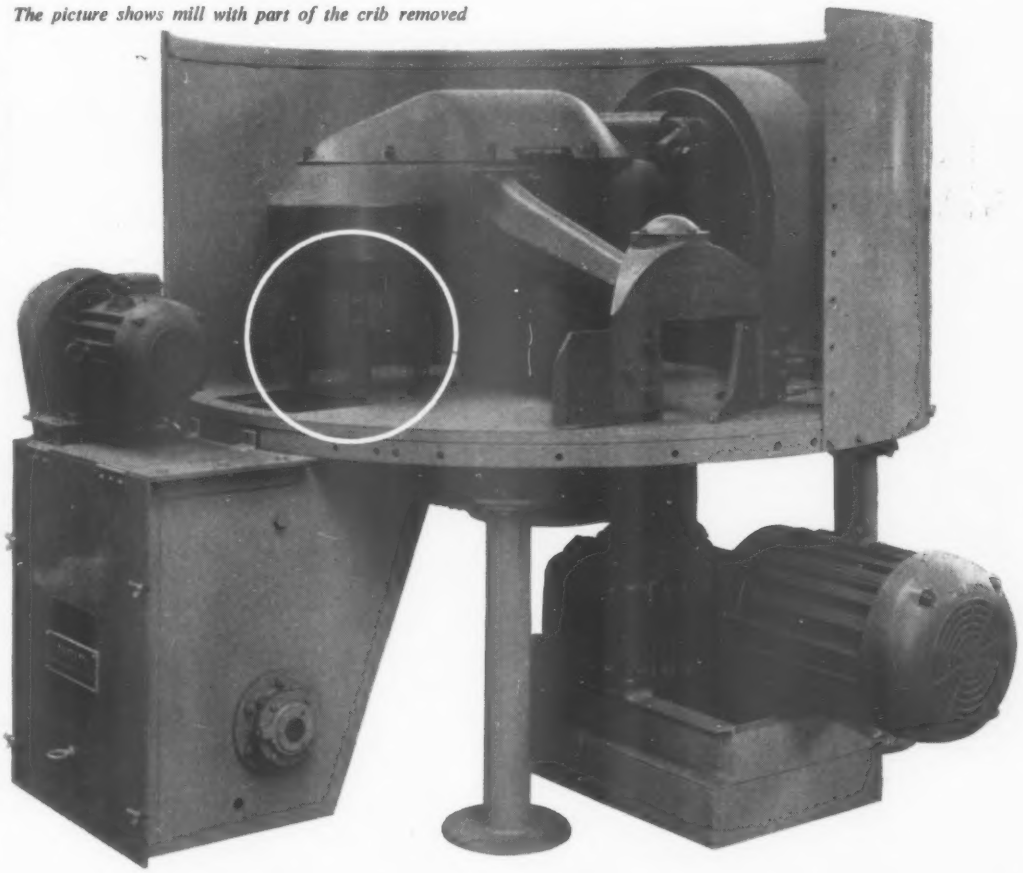

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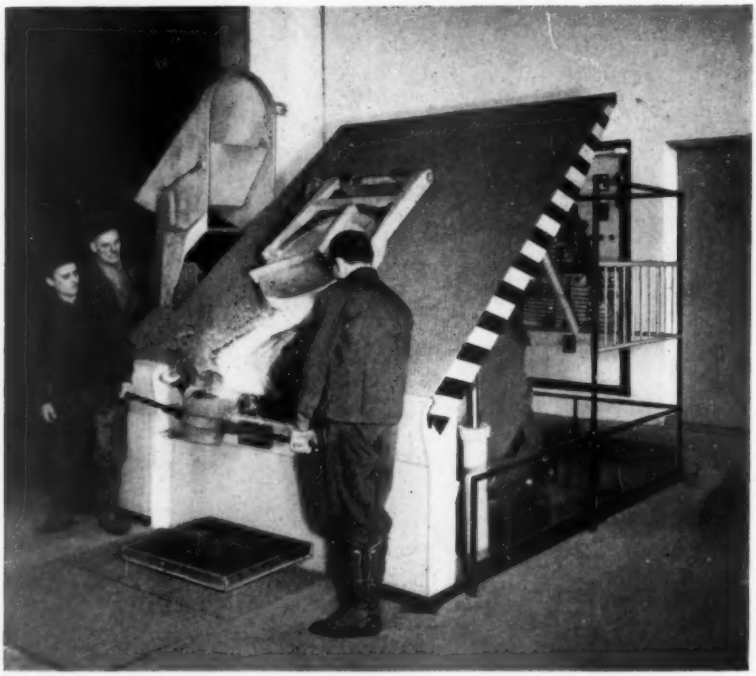
The illustration shows a Coreless Furnace (Reference "CSA") of 1½ tons capacity, with a rating of 300 KVA.



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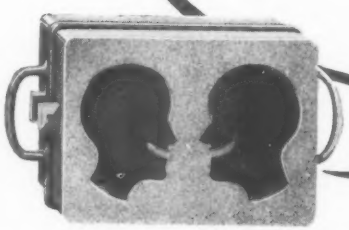

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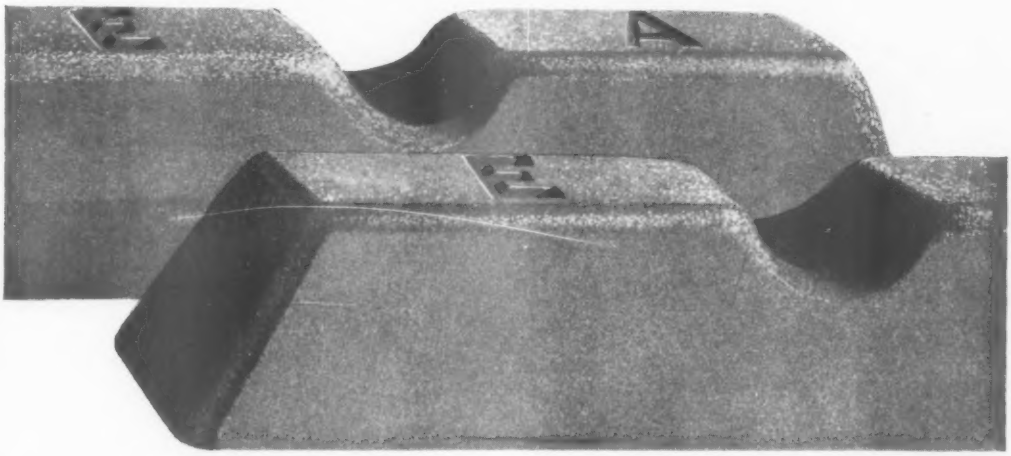

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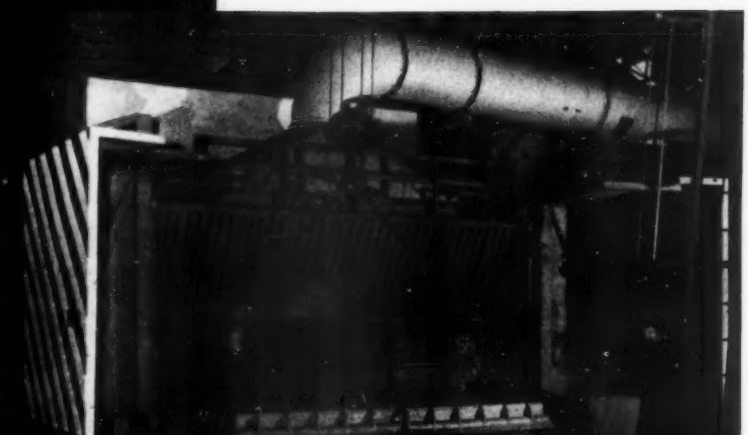
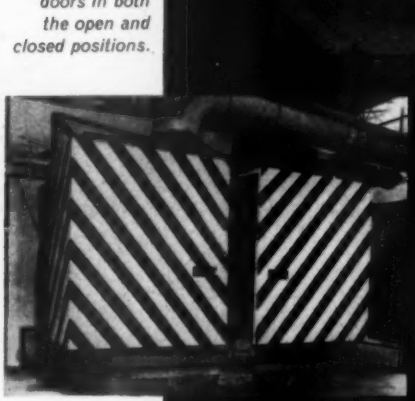


The photographs show the doors in both the open and closed positions.



An interesting feature of the Holmes-Schneible Multi-Wash installation in the steel foundry of English Steel Castings Corporation Limited are the hydro-pneumatically operated doors enclosing the shake-out hood. These doors which were designed in co-operation with English Steel Castings Corporation Limited, have been very successful in operation and have resulted in a considerable saving of exhaust volume necessary at the shake-out position. The installation is completed by two size 138 type 'JC' collectors, a dewatering tank, hoods on the sand preparation plant, fan and ducting.

For full details write for a copy of Publication No. 80/23

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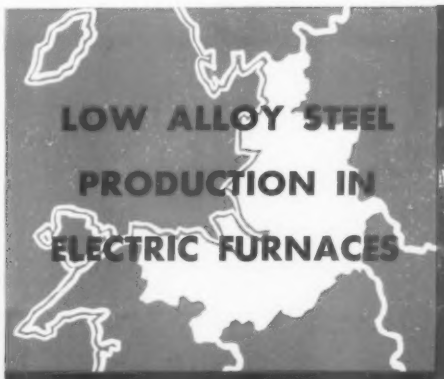


LOW ALLOY STEEL PRODUCTION IN ELECTRIC FURNACES

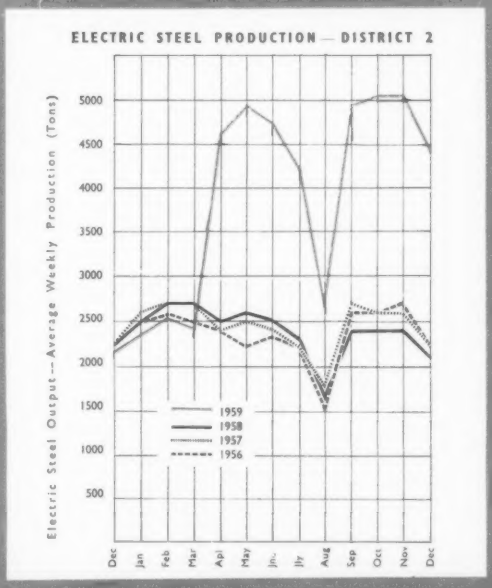
Official statistics show increase in output of tonnage electric steel

At Brymbo Steel Works Limited hot metal from a pre-refining vessel is transferred to the arc furnace where it is added to a partly molten charge of steel scrap.

No. 2. Brymbo Steel Works Limited

By the adoption of an oxygen pre-refining method, electric arc furnaces are used to produce special carbon and low alloy steel from hot blast furnace metal at Brymbo Steel Works Limited, Wrexham. Replacing a battery of four open-hearths, three 16 ft. Birlec arc furnaces, each rated at 12,500 kVA, have been commissioned since April 1959. The required output is obtained by operating two furnaces, with one standing ready, in conjunction with previously installed electric melting plant. The striking effect of the new furnaces on electric steel production for the district can be seen from the adjacent graph. The figures, which are taken from official statistics published jointly by the Iron & Steel Board and the British Iron & Steel Federation between 1956 and 1959, relate to output for Denbighshire, Flintshire, Cheshire and parts of Lancashire and Yorkshire.

Whereas electric furnaces had previously been used in this country for steel production from cold scrap, the Brymbo installation is the first to employ hot blast furnace metal.



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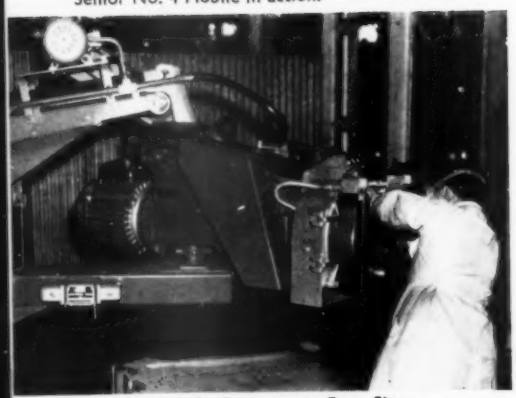
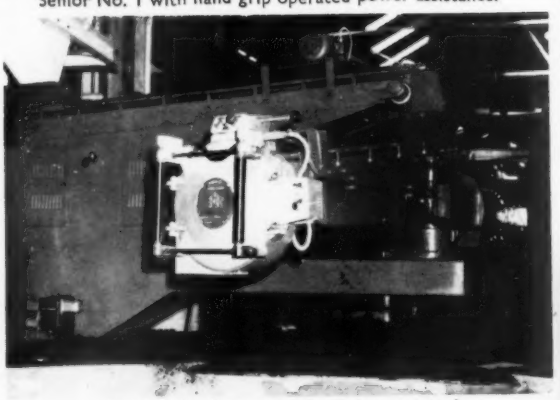


Power assisted Junior Sandrammer in Core Shop.



Senior No. 2 operating by remote control.

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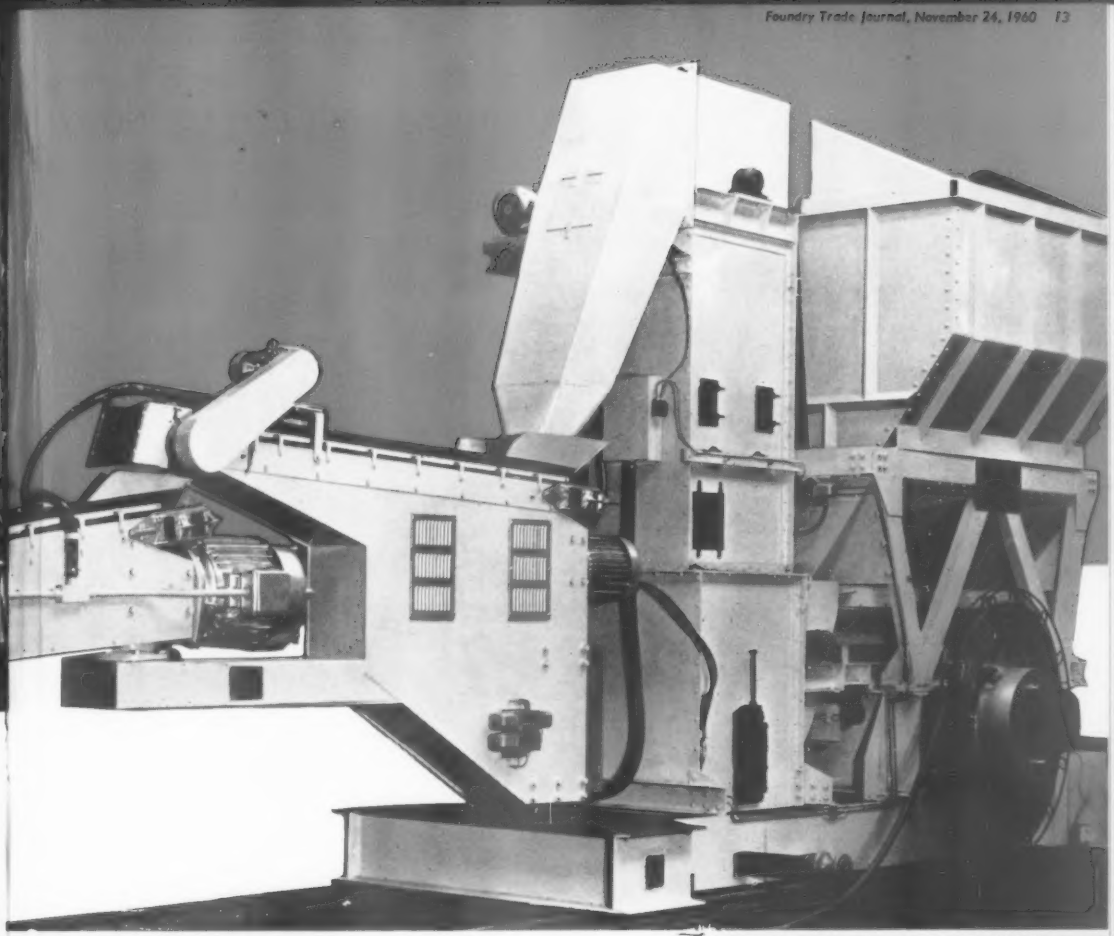
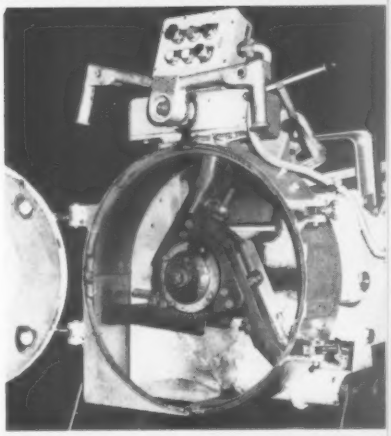


lobile No. 4 Sandrammer, 15ft. radius, shown bove has Patented 24in. dia. "Turbo-Ram" head lustrated on right. Feed Unit includes 7½-ton rop-bottom hopper and spare hopper. Fully auto- atic control from head. Output up to 2,000 lbs./min. "Turbo-Ram" head is also available on Stationary lo. 4 and No. 3 Sandrammer with 10ft. radius.

E. Sandrammers are covered by British Patent os. 570641, 663318, 657197, 714063, 714064, 714065 nd 742749. Patents granted or pending in other dustrial countries throughout the world.



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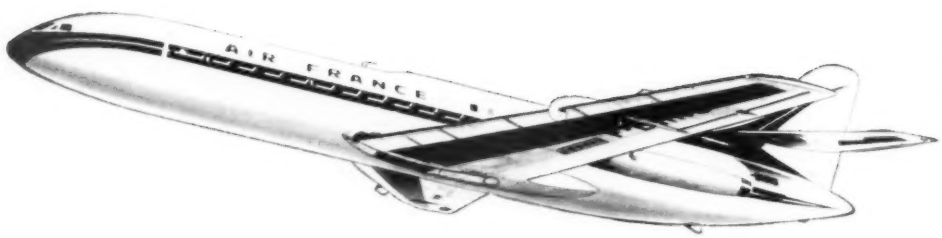

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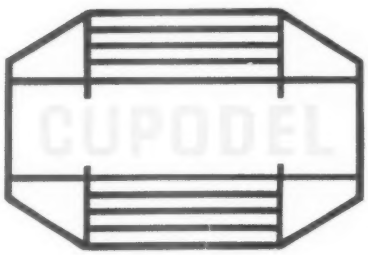

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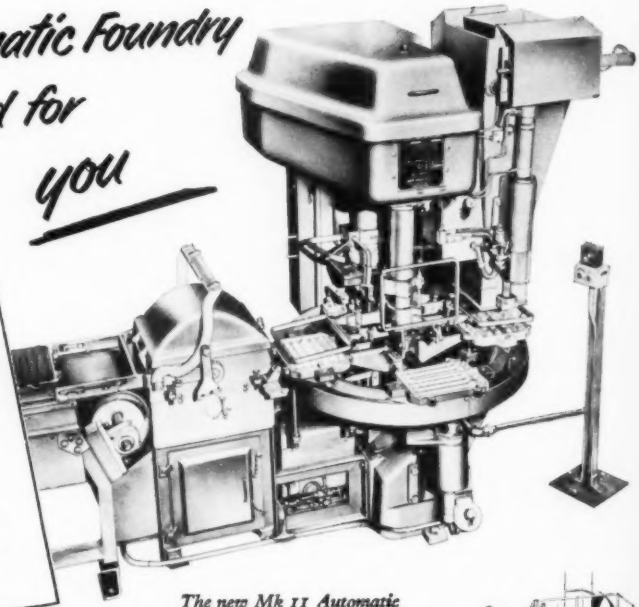
FOUR complete moulds in one minute



The new Mk 11 Automatic Moulding Machine.

The arrangement of the System is centred on one rotary moulding machine which performs automatically all the moulding operations, finally depositing the complete half mould on to a moving conveyor ready for assembly. From there, the only manual operations required are bringing the two half moulds together, guiding them into the rotary casting conveyor, metal pouring from a fatigue reducing mechanism and removing the mould and castings at the shake-out.

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★ Automatic moulding eliminates all skilled operations and increases production.
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★ Increased yield and high quality castings.
★ Small easily handled box reduces operator fatigue.
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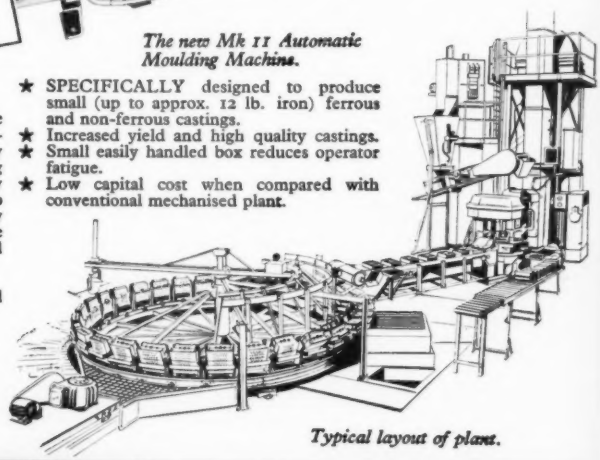

Typical layout of plant.

It's the

HALLSWORTH AUTOMATIC MOULDING SYSTEM

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TECHNICAL ANNOUNCEMENT

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- **Conventional blowers can be employed**
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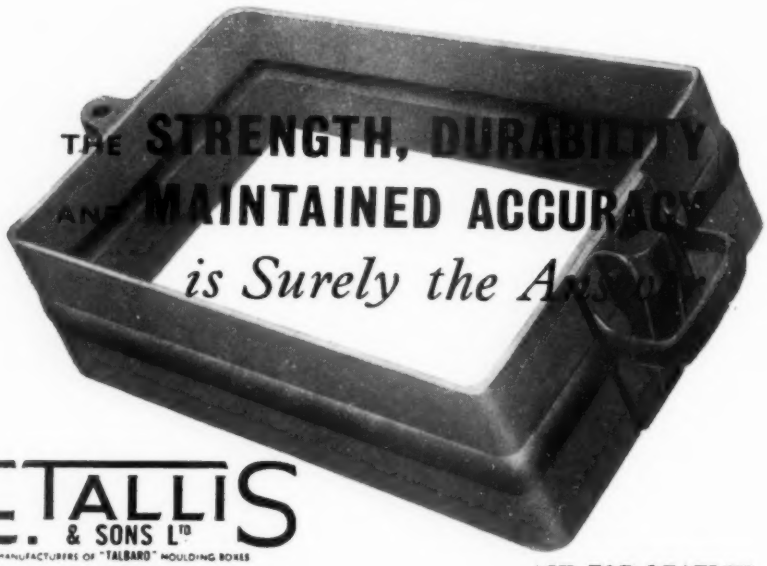

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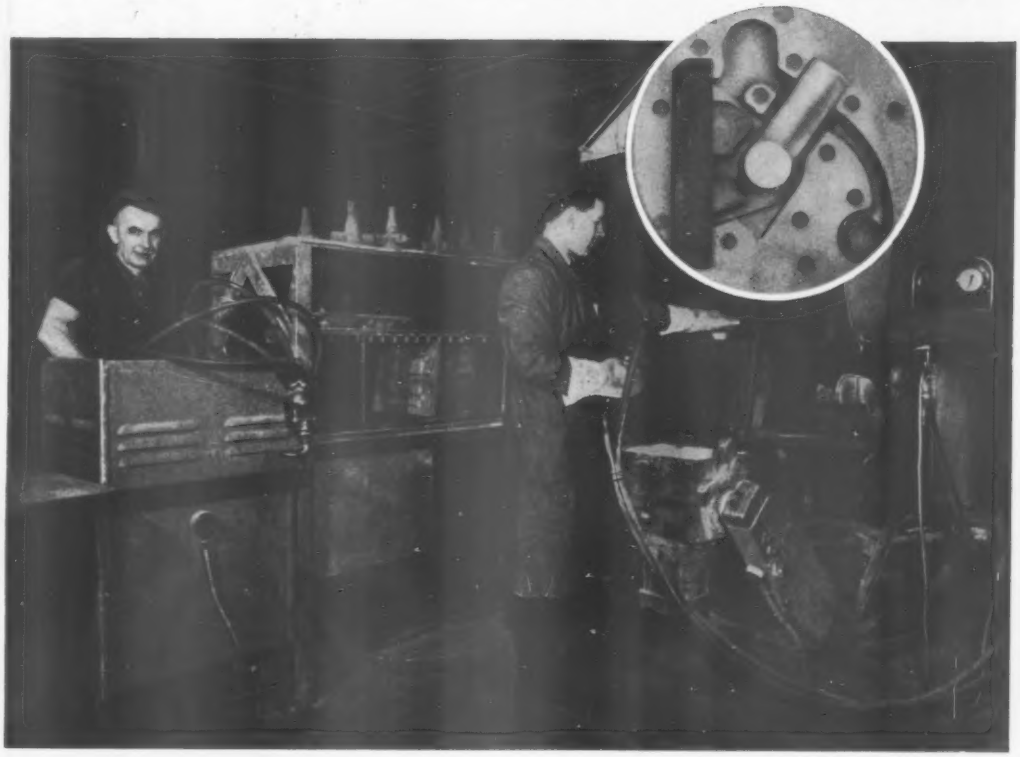

Photograph of a section of the POLYGRAM Shell Moulding equipment installed at A.P.V.-Paramount Ltd., Crawley, Sussex.

One of the Shell Moulded stainless steel castings incorporated in the munufacture of a Heat Exchanger. Photographs by Courtesy of A.P.V.-Paramount Ltd.

A.P.V.-Paramount Ltd. obtain substantial cost reductions and machining economies Shell Moulding a wide range of stainless steel components for the Chemical, Brewery and Allied Industries.

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Polygram Casting Company have a competent and complete service to offer, and your enquiries are invited.

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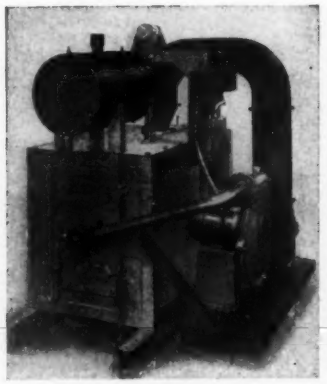

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Efficient | *Economical*

Reliable | *Self Contained*

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Reduce Operating Costs | *The ideal method of drying large floor moulds*

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8/219

sand cores for die castings

bonded by the CO_2/silicate process

Assembling the core-box.

Finishing the core, rammed with sand/silicate mixture.

Gassing with CO_2 bonds the sand in a few seconds.

Stripping the core-box from the core—it requires no reinforcement.

Oven drying is completely eliminated. Core boxes (or moulding patterns) are re-usable immediately.

DCL

Core release from the casting is easy and speedy.

The CO_2/silicate process offers simplicity, versatility and dimensional accuracy in the economical production of cores for die castings. This picture sequence shows how simply an aluminium casting was made by H. J. Maybrey & Co. Ltd., for Plannair Ltd., Leatherhead.

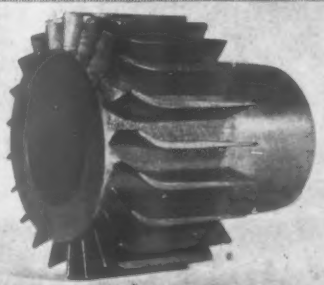
for details of the

CO_2/SILICATE PROCESS

write to

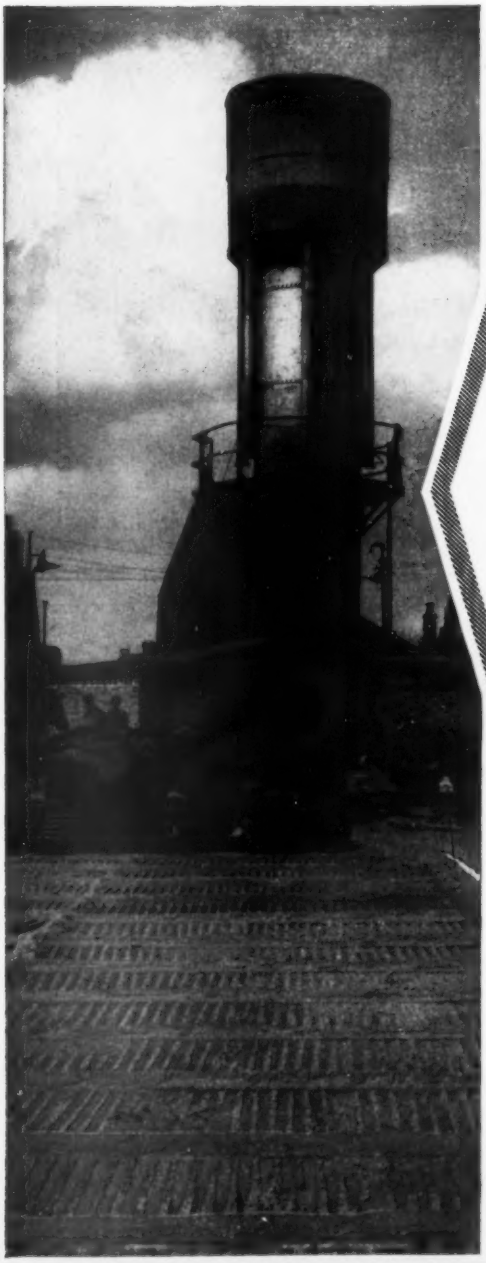
The Distillers Company Limited, Chemical Division, Carbon Dioxide Department, Devonshire House, Mayfair Place, Piccadilly, London, W.1. Tel: MAYfair 8867

Sales Offices:
Southern Area: Broadway House, The Broadway, Wimbledon, London, S.W.19. Liberty 4661
Northern Area: Queens House, Queen Street, Manchester, 2. Deansgate 8877



The casting is dimensionally accurate and has a good surface finish.

TA/3913



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FOR HIGH DUTY CASTINGS

CHILLED IRONS
FOR CHILLED CASTINGS

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FOR MALLEABLE CASTINGS

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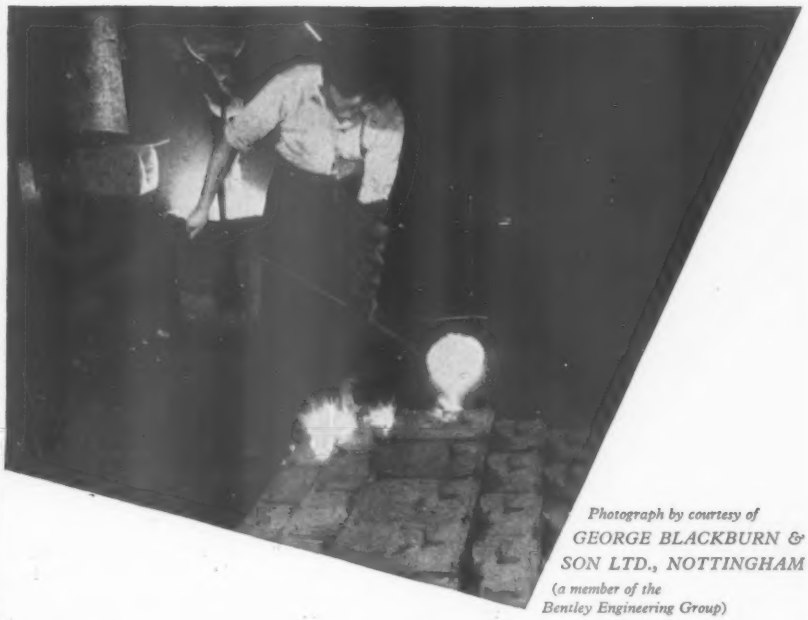

Photograph by courtesy of GEORGE BLACKBURN & SON LTD., NOTTINGHAM (a member of the Bentley Engineering Group)

Silica Sands — **Feslente** Resin Coated Sands

These leaflets may interest you— they will be sent free on request

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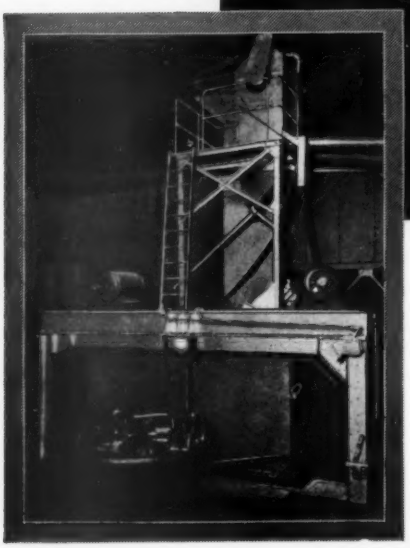
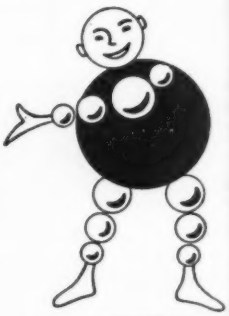
TILGHMAN'S Dual Swing Table Wheelabrator Plant

using W[illegible]



The plant illustrated is a 6ft. Dual Swing Table Wheelabrator installed at Messrs. Jarrow Metal Industries Ltd. It is engaged in cleaning a miscellaneous load of steel castings and the cleaning cycle is eight minutes. This type of plant enables one table to be unloaded and reloaded whilst the other table is under the blast stream and each table is capable of carrying two tons.

LESS THAN FIVE TONS OF STEEL SHOT CONSUMED IN 6 MONTHS



This plant was installed in November, 1956 and in May, 1957 had not used all of the 5 tons of S.460 WHEELABRATOR Steel Shot delivered.
In the first few weeks of operation the machine was working three shifts per day in order to catch up on production, but is now employed on a 44-hour week only. During five weeks of the early period, 250 tons of steel castings were Wheelabrated and maintenance replacements in this time amounted to one set of blades and one deflector plate.

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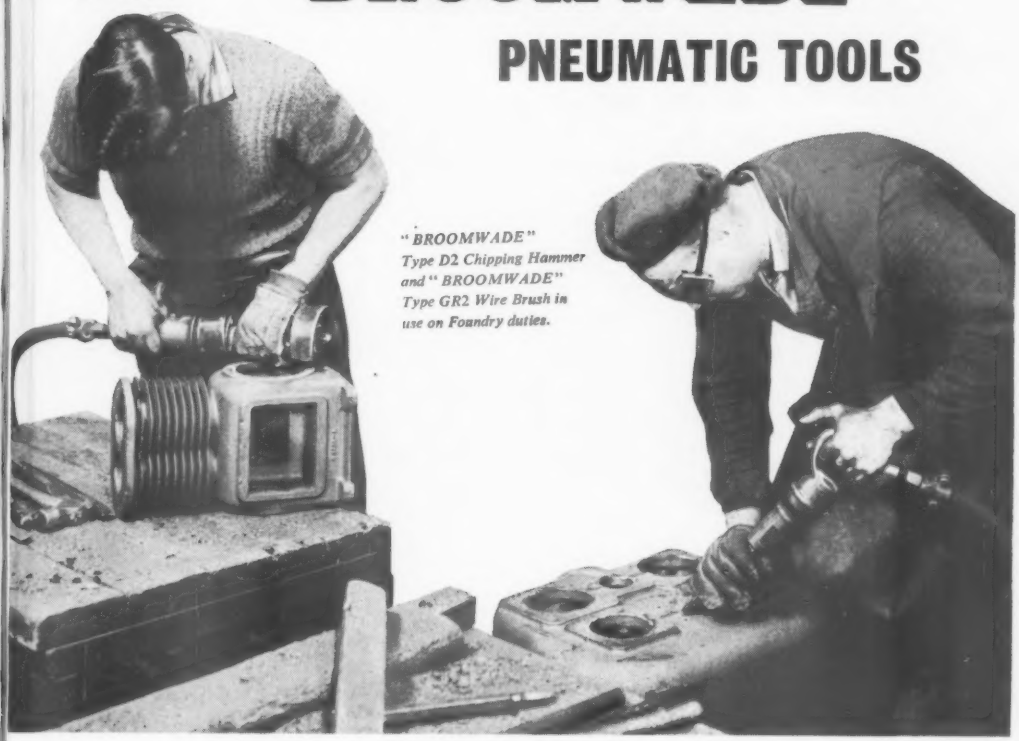
W161

Fettle Castings QUICKER & CHEAPER with "BROOMWADE" PNEUMATIC TOOLS



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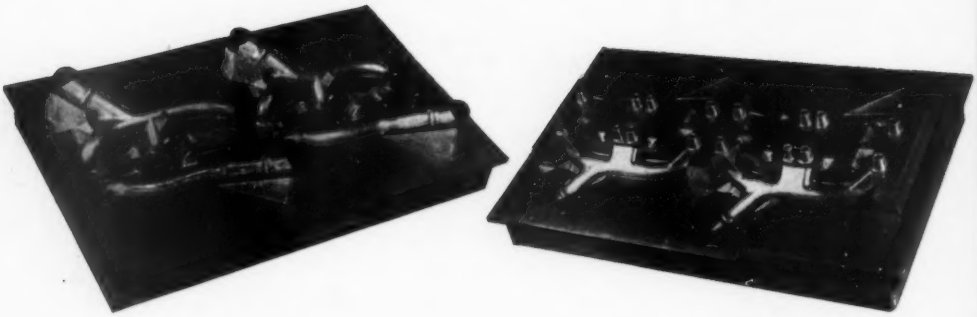

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Phone : CENtral 5371-2 GRAMS : NUCLEAR, B'HAM.

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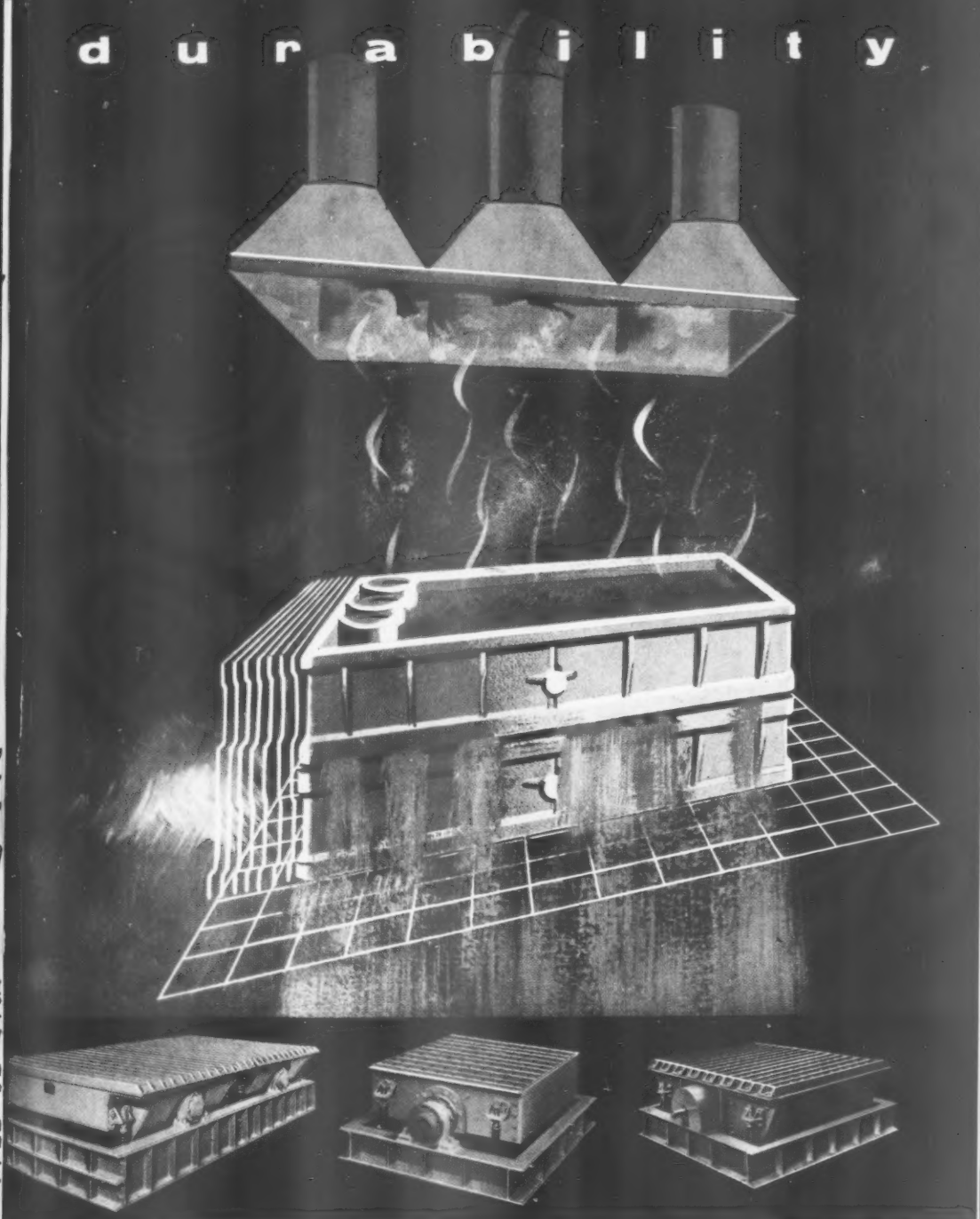

Solid ribbed hot-rolled steel sections re-inforced externally enable these boxes to resist the roughest usage for the maximum period . . . prolonged if a Shakeout Machine is used.

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Yes it's icker and queasier

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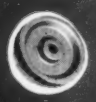

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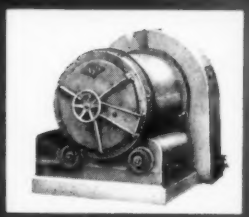
Whatever type of casting you require to clean, we have a machine for you. Remember Centriblast cleans fast.



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Many moulding sands have little plasticity even before use, and with most natural sands progressively less after each casting cycle. This is partly due to the presence of coal dust, ash and build-up of fines from dehydrated clay.

The importance of plasticity is only too obvious when the moulding sand reaches a stage which may be described as 'brittle'. Good plasticity is essential for deep draws and clean pattern stripping in all types of foundries.

Additions of new sand effect some improvement in plasticity. This is only temporary, however, because the clay constituent is contaminated with low fusible minerals.

High plasticity is one of the striking characteristics of Fulbond. This is partly due to its complex crystal structure and partly to its action in water. Regular additions of Fulbond to natural sands soon improve plasticity, texture and general workability. Many jobbing foundries find Fulbond indispensable for regenerating floor sand and increasing plasticity to suit deep vertical draws and intricate moulds.

Good plasticity is one of the advantages that synthetic sand users have over natural sand users, but it is fully appreciated that synthetic sand can only be used when it fits the practice and where suitable equipment for processing is available.

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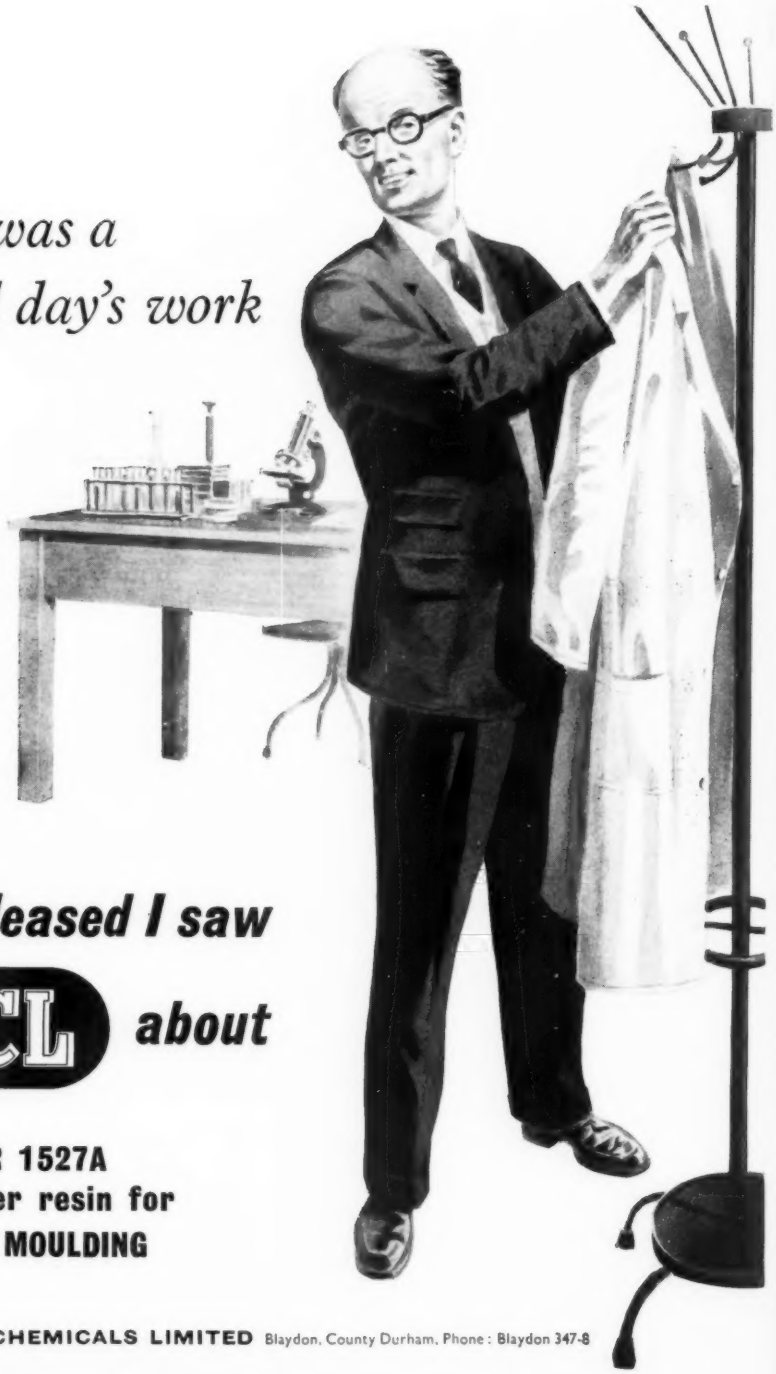

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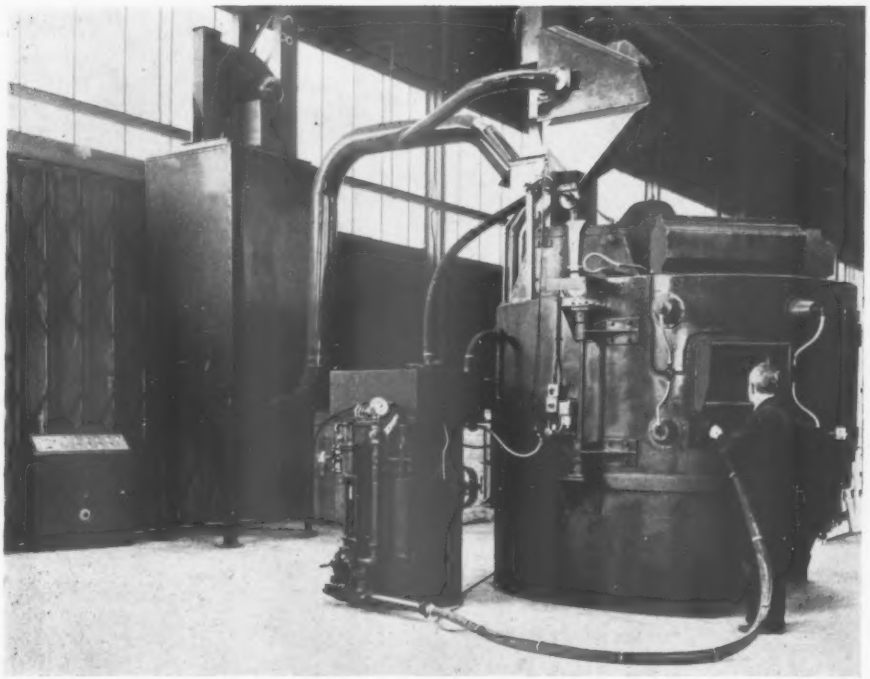

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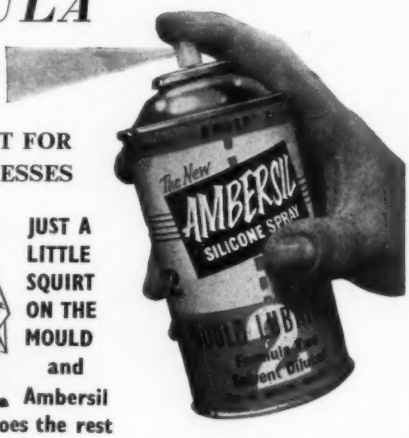

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This Ambersil product is now packed in Aerosol containers which facilitate sure and controlled application . . . sure, because the high pressure injection is a guarantee that the coating will fix to *every* part of the mould no matter how intricate the design, and controlled because just one even pass over the mould surface is all that is required.

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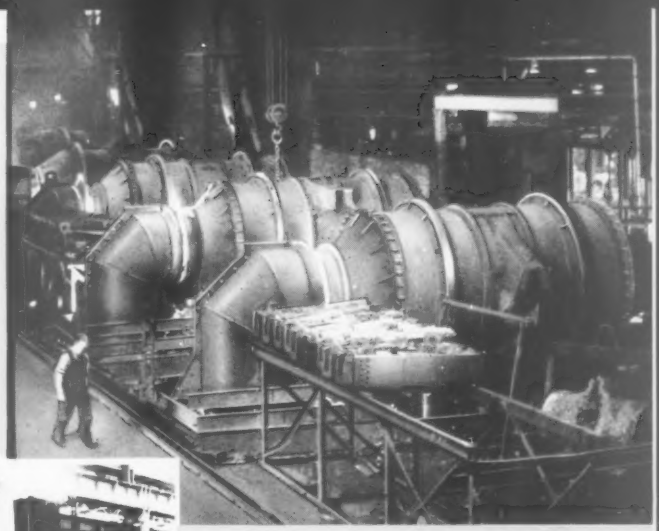

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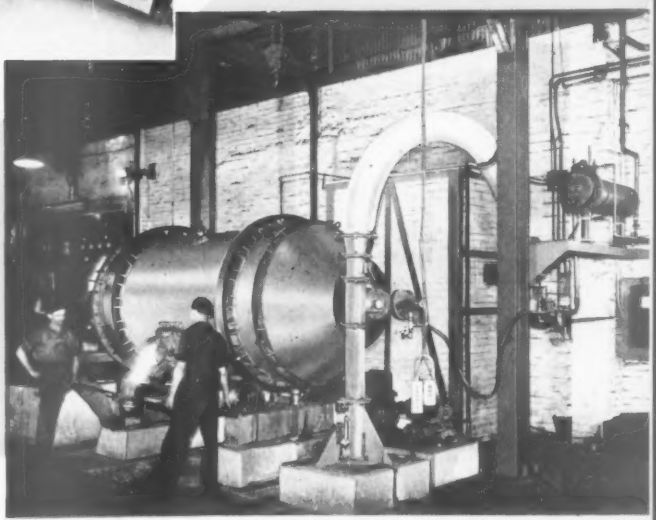

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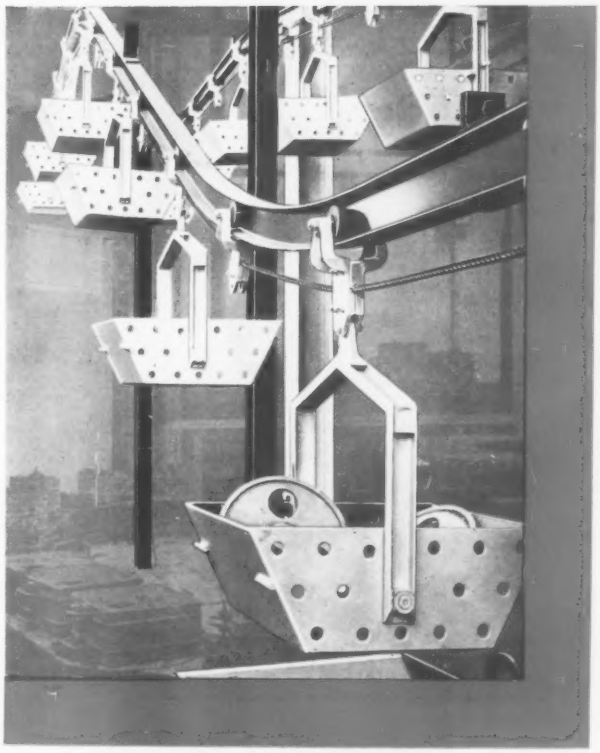

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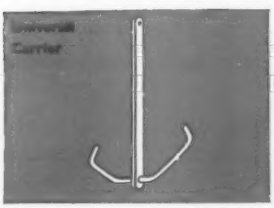

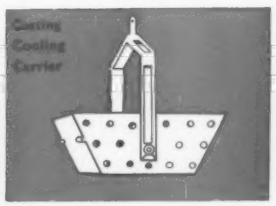

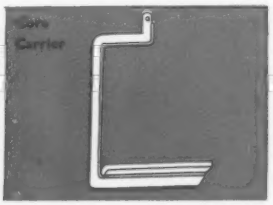

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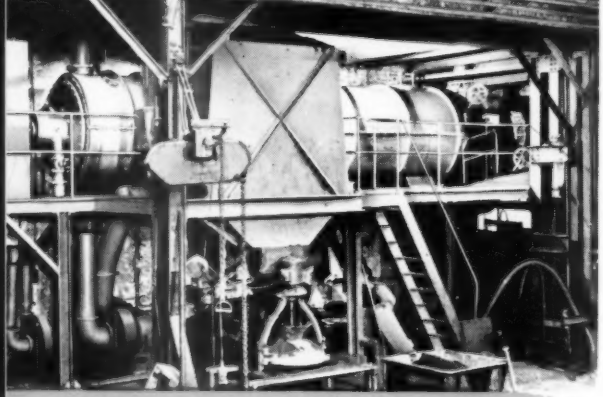
5 plants recently installed



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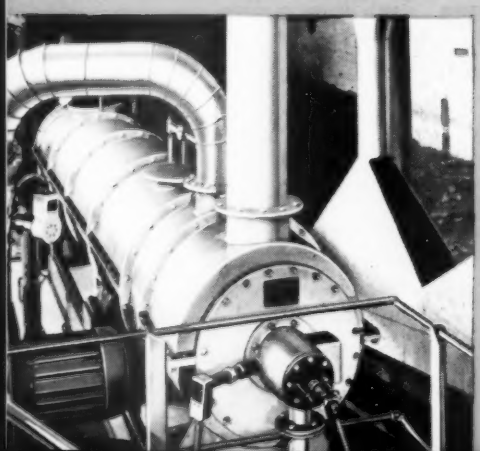

2

The Incandescent hot blast system has brought outstanding savings to these five foundries—on average, approximately £2 per ton of metal at the cupola spout. Savings of this order mean that the plant pays for itself in a few months. Moreover there are important intangible advantages which give smoother running and more constant analysis of metal. These factors are discussed and costs analysed in leaflet FP.3—Incandescent Hot Blast.

The last word in reliability—

INCANDESCENT FOUNDRY PLANT

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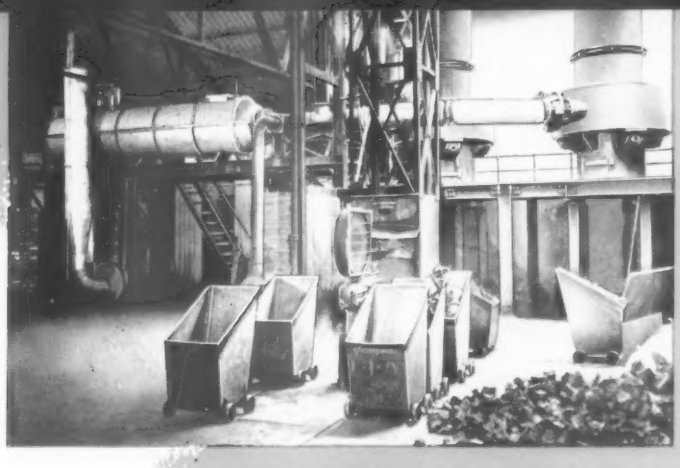
SMETHWICK · ENGLAND
Telephone : Smethwick 2121



3

When floor space is at a premium the heater can be arranged to take up very little room. This heater supplies blast at 450-480 C to a pair of 7-ton-per-hour cupolas.

(The Dudley Foundry Co. Ltd.)

A small blast heater connected to an unlined cupola with water-cooled shell. This heater is rated to supply 1,000 standard cubic feet per minute at 300 C.

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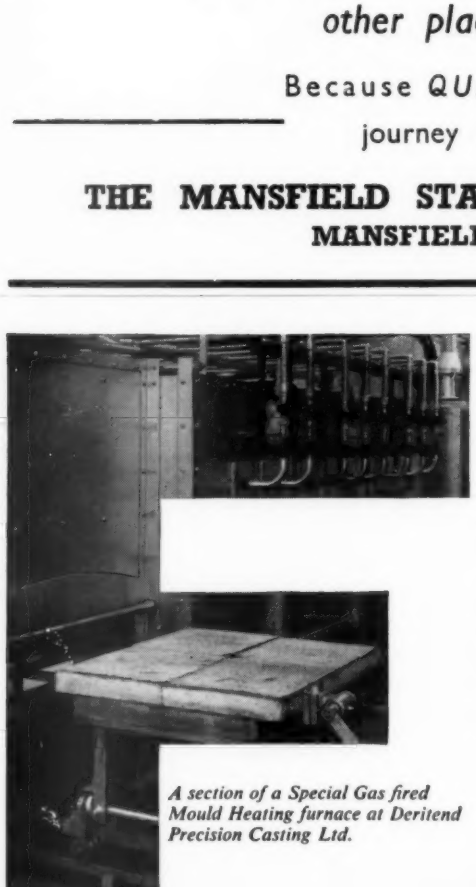

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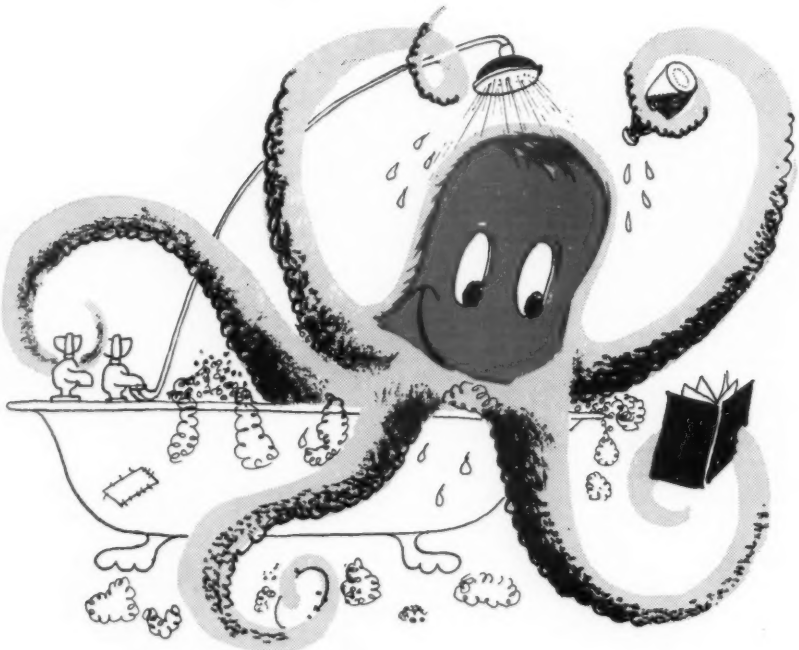

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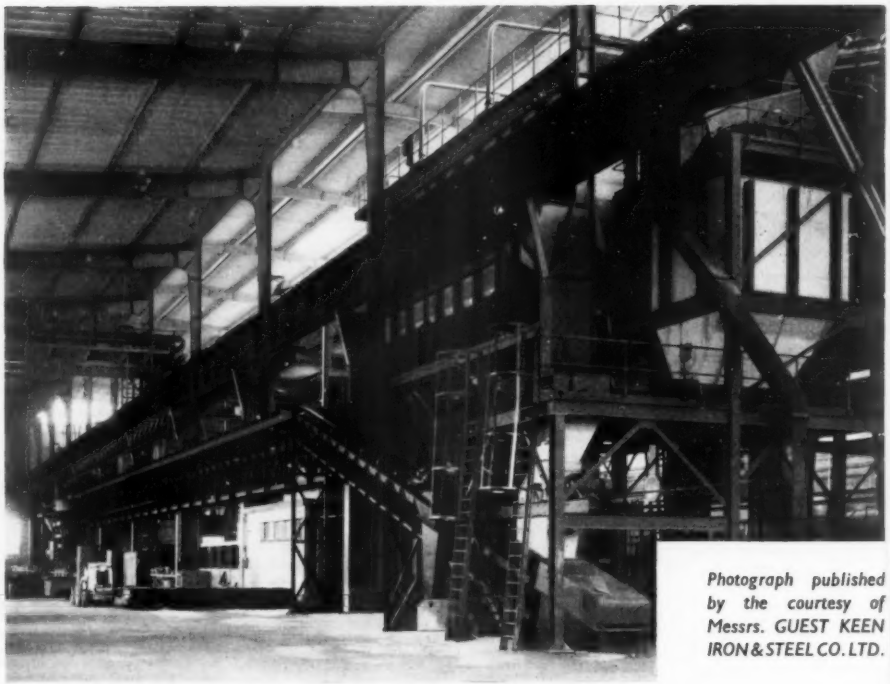

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FOUNDRY
TRADE JOURNAL

Vol. 109 November 24, 1960 No. 2294

Price and Quality Variations

The Purchasing Officers' Association has just issued a report entitled "Commodity Price Stabilization." It is taken for granted that stable prices are, in general, more acceptable to a buyer, as he is faced with the perpetual worry that under unstable conditions some of his competitors may be getting more favourable conditions than his own firm. Yet, because there exist and always have existed, high- and low-cost producers, the establishment of stable prices is a major difficulty. The report states that the most intelligent effort so far made was known as the International Tin Scheme, whereby a buffer stock was created which could be used to feed the market when scarcity and high prices were encountered, or the reverse. Yet this scheme had failed to overcome the difficulties arising from the selling of large quantities of tin by the USSR, China and Poland, and Government intervention had been necessary to avoid chaotic conditions.

Whilst the non-ferrous foundry industry is vitally interested in the prices of tin, copper, and other virgin metals, the ferrous side is not so directly affected, as there is not much movement in the cost of pig-iron, scrap and coke. Here, the worry is the variation in quality, which adds to the cost of production of castings because of control systems which have to be imposed by founders. One specialist in mass-production methods once asserted that he would prefer to use poorer raw materials of standard quality than high-grade ones, the properties of which varied from batch to batch. We firmly believe that grey-ironfounders have lost much business because preference has been given to steel pressings for vitreous enamelling due to difficulty experienced in producing day by day and week by week a standard casting, ideally suited for enamelling. The managers responsible for the conduct of such foundries averred that the enormous and frequent fluctuations in the quality of the raw materials made it exceedingly difficult to impose controls such as would result in uniformity of product.

Variations experienced in quality of moulding and core sands could probably be reduced by the creation of property specifications. These might well increase prices, but the consequent reliability of each consignment should reduce manufacturing costs. Already, much progress has been made by the issue of intelligently-prepared data-sheets by proprietors of sand quarries and makers of refractories. These are evidence that serious efforts are being made to reduce variables. The latter, whether they be of price or quality, are the biggest bugbears to those in charge of manufacturing processes. The way to avoid price fluctuations suggested in the Report referred to earlier is to remove causes and the same might be said of quality variations.

Correspondence

To the Editor of the FOUNDRY TRADE JOURNAL.

SMALL FOUNDRIES AND LABORATORY SERVICE

SIR,—Having read the article in the issue of the JOURNAL dated November 3, headed "Small Foundries and Laboratory Service," by Jacques, I found it interesting in the practical approach to the control of a cupola furnace in a small foundry. I would, nevertheless, question the practice recommended of charging low-grade iron to the cupola prior to higher grades, with the objective of preheating the furnace and promoting the production of hot, fluid iron from the later charges. Metal of uniform composition is only achieved by making as few changes in cupola mixtures as possible. If standard charges are formulated following a careful selection of available materials and additions are made at the furnace spout or ladle, irons of several specific qualities can be produced regularly and consistently and the difficulty of "finding" special charges in the metal, as delivered, is eliminated.

In the course of an ironfounder's casting routine there are at least two recurring problems. They consist of deciding how to dispose of the first iron out of the cupola and for what type of casting to use the changeover or "hybrid" iron which may result when producing more than one grade of iron in a single melt. One solution to these problems is to endeavour to obtain orders for castings of "meaty" proportions which are subject to a minimum of machining for which to use metal of doubtful composition or low temperature. The selling prices of such castings are not usually very attractive, but, on the other hand, there is some financial return which is more than one would get from the alternative of pigging the iron.

The fewer the number of metal mixtures the easier it becomes to identify returning runners and risers with chemical composition and advantage should be taken of this in the preparation of the higher grade irons by using only one's own scrap returns so that, in effect, all the mixture ingredients of the charges are of known composition. Except, in perhaps a few circumstances, it is not possible to operate the entire daily cast on this principle but then all castings do not require high-grade iron and the principle can be relaxed a little towards the end of the melt and mixtures containing scrap iron from external sources may be used for producing castings for which specified strength values come rather lower in the scale.

There is nothing particularly original about this method of operating a cupola furnace, but it is one which I have used over a number of years and has proved very effective in producing and maintaining irons to specification—with the minimum of laboratory work.

Yours etc.,
P. D. PINCOTT,
Director.

Erifo, Limited,
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November 6, 1960.

Mr. C. BIRCH, district traffic superintendent at York for British Railways, has been appointed assistant operating officer in the North Eastern Region of British Railways at York. He has previously served at Sheffield, Wakefield and Sunderland.

IBF Foundry Foremen's Training Course

A training course for foundry foremen is again being organized by the Institute of British Foundrymen and will take place next year at the Grand Hotel, Scarborough, from April 20 to 22. The course, designed to give practical guidance to foremen, will include the following lectures: "Union Agreements and Procedure," by Mr. F. Shepherd, J.P. (of Head Wrightson Steel Foundries, Limited); "Production Control and Planning," by Mr. D. Killingworth, B.SC., F.I.M. (Ruston & Hornsby, Limited); "Health and Safety in Foundrywork," by Mr. W. B. Lawrie, M.B.E., M.SC. (H.M. Engineering Inspector of Factories); "Cupola Control," by Mr. K. G. Harris, B.SC., F.I.M. (Guest Keen Iron & Steel Company, Limited); "Non-ferrous Furnace Control and Melting Practice," by Mr. D. W. Brown, B.SC., F.I.M. (Morgan Crucible Company, Limited); and "Pneumatic, Hydraulic and Mechanical Gadgets in the Foundry," by Mr. G. C. B. Lamb (Ley's Malleable Castings Company, Limited). A discussion on a "Logical Approach to Methods and Casting Problems" will be opened by Mr. S. N. Wrightson, B.SC., lecturer at the National Foundry College.

Accommodation for 200 is available at the Grand Hotel, and the course will be self contained unless this number is exceeded, in which case it will be necessary for late applicants to stay at other hotels. The charge for accommodation at the hotel for the full period of the course, including luncheon on the Thursday and Saturday, is £6 14s. 6d., there being a reduction of 10s. where two participants are prepared to share a twin-bedded room. Bathrooms will be charged extra at 10s. per night. Those not attending the whole period of the course will be charged from 36s. to 45s. for bed and breakfast, plus the cost of any additional meals; 10 per cent will be added to the bills to cover gratuities. The registration fee for each participant is £1 10s. Forms of application to attend the course may be obtained from the Institute of British Foundrymen at 14, Pall Mall, London, S.W.1, to whom they should be returned not later than March 1, 1961.

Forty Years Ago

The November, 1920, issue of the JOURNAL carried an account of the inaugural meeting of the British Grey and Malleable Cast Iron Research Association now known as the British Cast Iron Research Association. Lord Weir was elected president, and of the Council Mr. H. J. Yates was chairman, and Mr. H. B. Weeks and Mr. J. F. Cook were vice-chairmen. Mr. T. Vickers was appointed secretary. An article in this issue contributed by Dr. Richard Moldenke drew attention to the fact that as a result of the use of low-grade cast-iron during the first world war there had been an alarming increase in sulphur in stock-piles of the metal—the sulphur was later to be reduced by the use of soda-ash. As far as can be ascertained, none of the foundries newly registered at that time is in existence to-day.

The Department of Scientific and Industrial Research announce that Mr. FRANK COUSINS, general secretary of the Transport and General Workers Union, is to replace Mr. H. DOUGLAS, general secretary of the Iron and Steel Trades Federation, as a member of the Council for Scientific and Industrial Research.

Flow of Metal through Screens

*By I. J. Birch, A.M.I.B.F., and G. Llewelyn, B.Sc., F.I.M.**

Casting faults resulting from the entrapment of the products of oxidation in moulds have posed a problem that has grown with use of certain light alloys. The molten condition carries an inherent tendency to spontaneous chemical reaction with the atmosphere and any inclusions in the metal environment. Enhanced behaviour by some metals in this direction has occasioned much thought to its prevention. Ideas have developed around physical control of environment, chemical inhibition of the oxidation itself, and physical elimination from the mould of harmful products once formed. It is with the last approach to the problem that this article deals and aims to shed light on the best technique for "straining-off" injurious materials.

During the melting and casting of certain light alloys, particularly magnesium-base alloys, it is difficult to avoid the formation of oxide. If the oxide is formed in the actual casting, then the runner system must obviously be faulted, but if it is created in the runner or carried over from the crucible it may be possible to prevent the oxide entering the casting by the use of screens of perforated plate or ceramic. The usual practice for light alloys is to insert the screens in an enlarged portion of the runner; this prevents the metal from being severely choked at the screens.

Since very little work has been done to assess the mechanism of hot metal flow through screens, this work was initiated to study the effect of various conditions on metal flow through screens and to obtain a photographic record of the actual flow. To obtain these photographs of the metal passing through the screen, moulds were cut away immediately above the screen well and the metal flow photographed with a cine-camera running at 16 frames per sec. Tests were carried out on both aluminium alloy LM 23 and magnesium alloy ZRE.1.

Review of Previous Work

In earlier work[1], water or mercury has been photographed passing through screens, this however does not give any indication of the effect of metal temperature and surface tension. Elliott and Mezoff[2] carried out experiments with magnesium plate castings and found that screens were valuable in reducing oxide skins, blowholes and microporosity. They considered that their use enabled an unrefined runner-system to produce good castings; this view is also shared by Richins[3]. It was noticed that a build up of the metal stream occurred on the sprue side of the screen, this continued until sufficient metal head had built up causing the metal to penetrate the screen. This arrest at the screen has been mentioned by Caillon[4], who in dealing with magnesium alloys, considered that if the screen mesh was below 3.5 to 4.0 mm. the metal would be obstructed too much at the outset, and may even stop flowing completely, until the pressure on the screen, due to the metallostatic head, exceeded the surface tension of the magnesium-oxide particles. He therefore recommended placing the screen at an angle of 45

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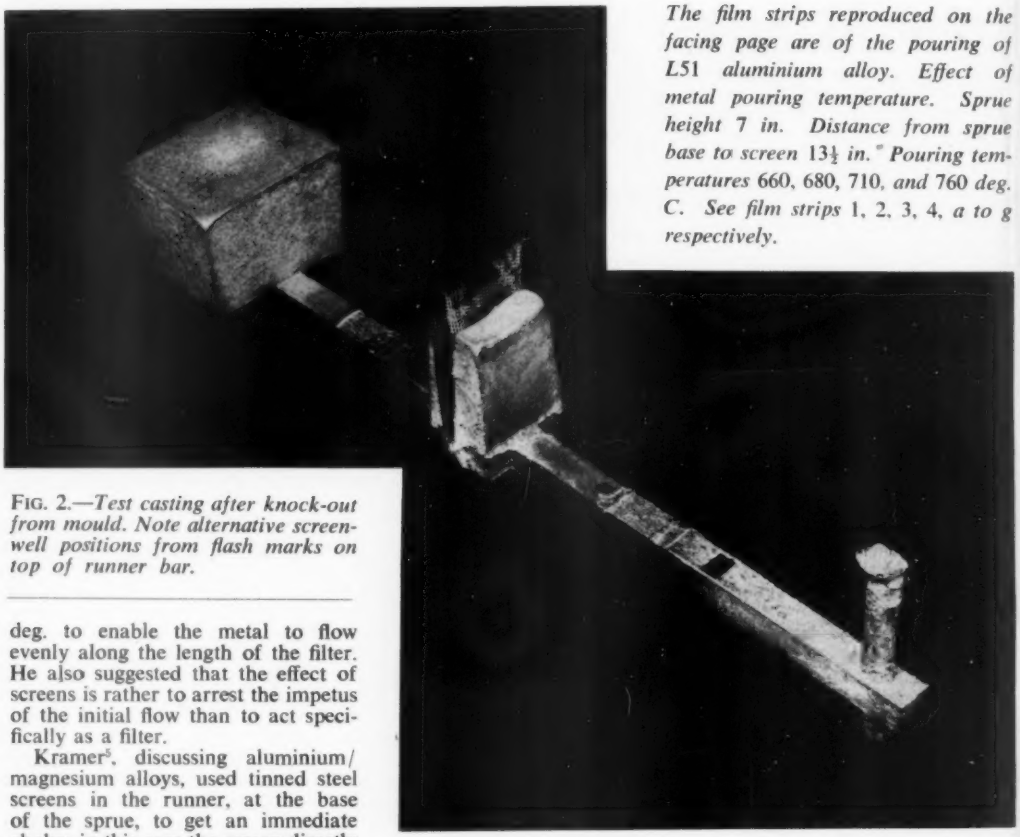
FIG. 1.—*A typical experimental mould set-up just subsequent to casting.*



The film strips reproduced on the facing page are of the pouring of L51 aluminium alloy. Effect of metal pouring temperature. Sprue height 7 in. Distance from sprue base to screen 13½ in." Pouring temperatures 660, 680, 710, and 760 deg. C. See film strips 1, 2, 3, 4, a to g respectively.

FIG. 2.—*Test casting after knock-out from mould. Note alternative screen-well positions from flash marks on top of runner bar.*

deg. to enable the metal to flow evenly along the length of the filter. He also suggested that the effect of screens is rather to arrest the impetus of the initial flow than to act specifically as a filter.

Kramer[5], discussing aluminium/magnesium alloys, used tinned steel screens in the runner, at the base of the sprue, to get an immediate choke; in this case the screen directly reduced the cross sectional area of the runner.

Grube, Kura and Jackson[6] attempted to evaluate screens using transparent moulds, but found that this technique was not satisfactory. They also showed by use of radiographs the position of oxide prevented from passing through the screen. Two types of screens were used:—(*a*) a cylindrical screen, filled from either the top or the bottom, (*b*) a screen backed with a pad of steel wool.

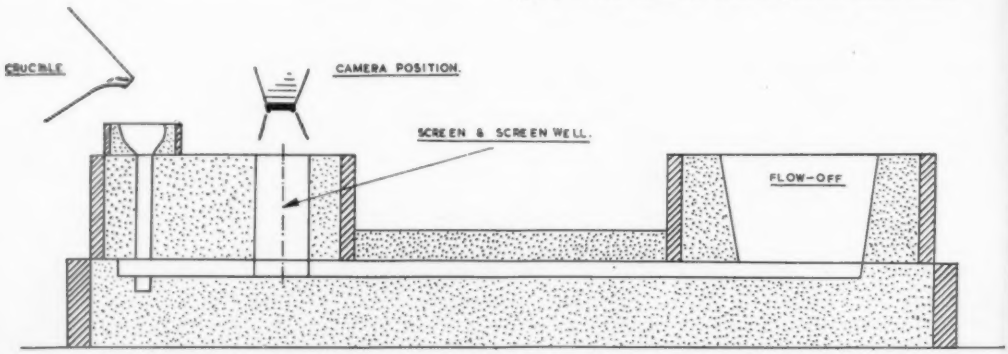


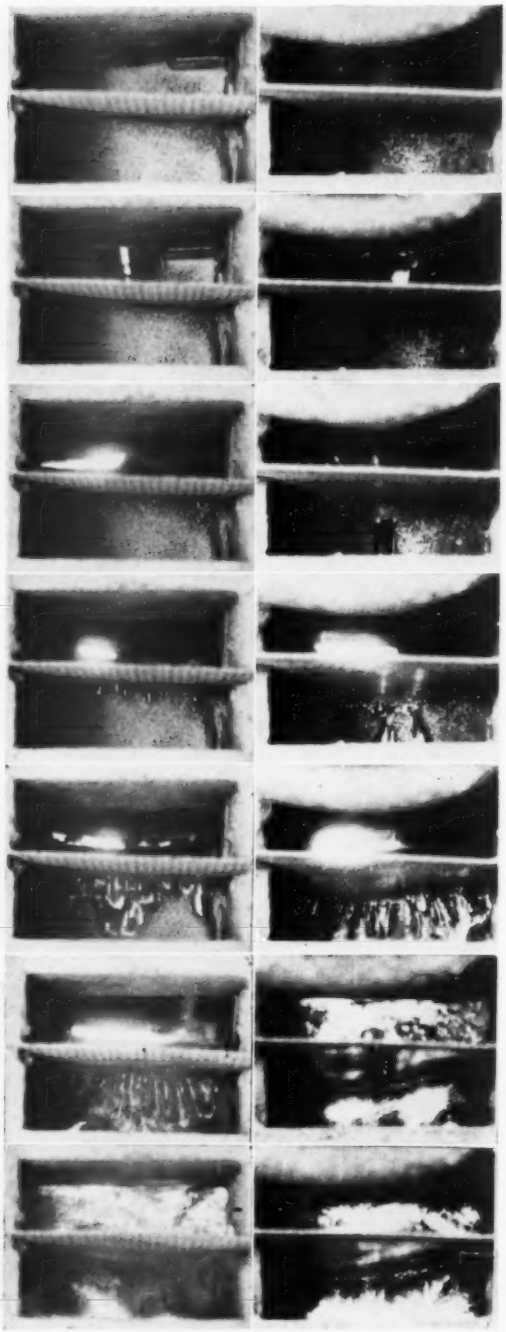
FIG. 3.—*Schematic cross-section of mould set-up depicted in Fig. 1 and also illustrating the position of the camera set up to take plan "views" of the screen-well phenomena.*

Film strip 1*a* (*top*) *to* 1*g* (*bottom*).

Film strip 2*a* (*top*) *to* 2*g* (*bottom*).

Film strip 3*a* (*top*) *to* 3*g* (*bottom*).

Film strip 4*a* (*top*) *to* 4*g* (*bottom*).



Film strip 5a (top) to 5g (bottom). | *Film strip 6a (top) to 6g (bottom).*

Experimental Technique

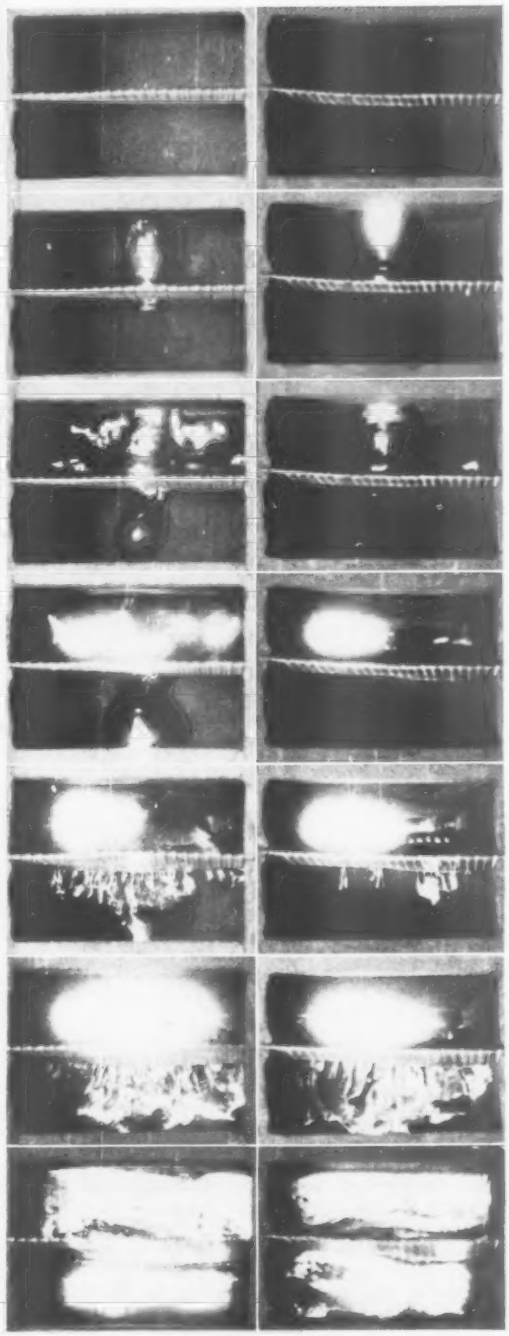
A fixed sprue diameter 0.75 in., was used with a 0.938 sq. in. runner to give a ratio of 1:2, the screen well being 3 in. by 2¼ in., and height 4½ in., the average test casting weight was 13½ lb. To enable the metal flow to be photographed, the screen well and screen were extended to the top face of the mould. The well positions were located by dowels to ensure reproducibility and moulds were made using Mansfield Red aluminium moulding sand, green permeability 30 to 40 cc. per min., green compressive strength 6 to 8 lb. per sq. in., moisture 5.5 to 6.5 per cent. Approximately 40 lb. of LM 23 alloy was degassed, grain-refined, and poured from a 50 lb. capacity plumbago crucible, the metal pouring temperature was taken in the crucible with a chromel-alumel shielded couple and the test casting was immediately poured. The metal flow was photographed using a cine camera (16 frames per sec.) which was positioned directly over the screen well. Exposures commenced simultaneously with pouring and continued until the system was full. The prints reproduced were selected to show the type of flow pattern observed, and do not show the complete flow sequence.

The mould set-up and a typical test casting are shown in Figs. 1, 2 and 3. The screen material used was mild-steel perforated plate 0.085 in. hole dia., 26 s.w.g., 68 holes per sq. in. In the foundry with which the Authors are associated, the majority of runners are attached to the pattern plate, and to facilitate moulding the screen well does not extend below the runner level. In view of this the screen well for all experiments was positioned to simulate these conditions and the following variables investigated:—(*a*) The effect of metal pouring temperature variations in the range of 660 to 760 deg. C.; (*b*) the effect of sprue height, two heights were compared, 7 in. and 22 in., to give comparison between the small and larger castings, and (*c*) the effect of screen distance from sprue base. Four distances, 3, 8, 13½ and 24 in. were compared, the metal temperature being constant at 710 deg. C.

Effect of Metal Pouring Temperature

Experimental casts were poured at 660, 680, 710 and 760 deg. C. (film strips 1 to 4, and Table 1). The distance from the sprue base to the screen was constant at 13½ in. The following observations were made:—(*a*) Up to 710 deg. C., the first metal through the screen formed a gradually increasing pool on the casting side of the screen, opposite the runner channel; at 760 deg. C. this effect was not observed: (*b*) at temperatures up

Shown alongside are further film strips for alloy L51. Pouring temperature 710 deg. C. Effect of sprue height. Sprue height 22 in. Distance from sprue base to screen 13½ in. Compare with 3a to g. (Film strip 5a to 5g.) Effect of sprue to screen distance. Sprue height 7 in. Sprue to screen distance 3 in. (6a to 6g.)



Film strip 7a (top) to 7g (bottom). | *Film strip 8a (top) to 8g (bottom).*

to 710 deg. C. initial penetration of the screen occurred. At 760 deg. C. this was not observed; this may be due to the increase in surface tension caused by a stronger oxide film; (*c*) a build up of metal on the sprue side of the screen was observed at all temperatures. This indicated that the runner from screen to sprue was full to the height of the metal in the screen well. This factor should improve the efficiency of the gating system; (*d*) although air entrapment could not be positively evaluated, the jet effect on the casting of the screen must entrap air between the jets; (*e*) the clean-up time, *i.e.*, time from first observation of metal in screen well to tranquil flow in the well, was fairly constant at all temperatures, and (*f*) a jet or "watering can" effect was observed at all temperatures, but was not so marked at the lowest temperature, *viz.*, 660 deg. C.

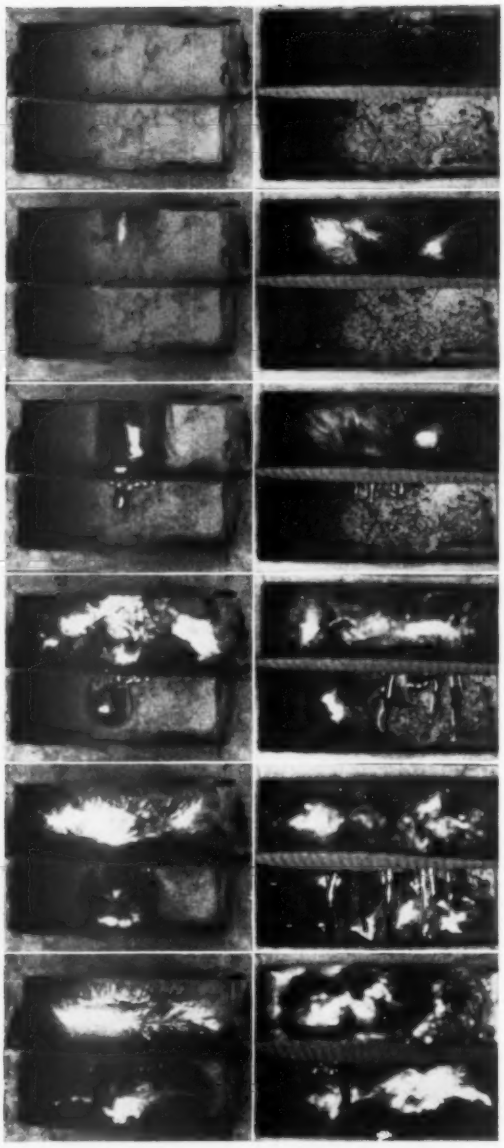
The initial flow pattern appears to be influenced by the metal temperature. If optimum screen efficiency occurs when the screen is passing metal uniformly, then it is more efficient at higher casting temperatures. The clean-up times which indicate the period of maximum turbulence in the screen well are fairly constant. The most influential factor is probably the effect of surface tension which would account for the differences in metal behaviour. This can be seen when comparing the flow at 760 deg. C. film strip frame 4d with 3d, where the metal temperature was 710 deg. C.

Effect of Sprue Height

Experimental casts were poured with the sprue heights at 7 and 22 in., the distance from the sprue base to the screen was kept at 13½ in. and the pouring temperature was maintained at 710 deg. C. (Film strip 3 and 5 and Table 2). The results can be summarized as follow:—(*a*) Initial penetration was observed when the sprue height was 7 in. but in two out of three tests with sprue height of 22 in. initial penetration of the screen was not observed; (*b*) a build up of metal on the sprue side of the screen occurred at both sprue heights; (*c*) the casts with a 7 in. sprue height formed a pool on the casting side of the screen, whereas with a 22 in. sprue height the flow through the screen was more uniform; (*d*) no visible air entrapment on the sprue side of the screen was observed, but the jet effect would very likely cause entrapment on the casting side of the screen; (*e*) the clean-up time in the screen well was slightly faster with the 22 in. sprue height, *i.e.*, 1.1 sec. compared to 1.5. sec.; and (*f*) a jet effect was observed at both sprue heights but as mentioned in (*c*) was more uniform with a sprue height of 22 in.

From the results it would appear that the metal velocity at the screen was probably slightly less with the 22 in. sprue height. This is contrary to

(*Alongside.*) *Pouring temperature* 710 *deg. C. and sprue height* 7 *in. Effect of sprue to screen distances* 8 *and* 24 *in. respectively.* (*Film strips* 7 *and* 8 *a to g.*) (*Film strips also of* L51 *alloy.*)



Film strips for magnesium ZRE1. Pouring temperature 773 deg. C. Sprue height 16 in. Distance from sprue base to screen 13½ in. (Left-hand film strip 9a to f, top to bottom.) Similarly with wire wool in well (right-hand film strip 10a to f, top to bottom.)

expectation and the reason for this is not easily explained, very little work has been reported on the effect of sprue height on the metal velocity in unpressurized systems. However, with a 1:1 sprue to runner ratio, Johnson *et al* observed a reduction in metal velocity at a critical sprue height. This effect was thought to be caused by a discontinuous metal column in the sprue, thus losing the effective head pressure. This effect was probably a borderline one, as out of three casts only one showed initial penetration of the screen. During this series of experiments the result of not maintaining a full pouring basin was unintentionally demonstrated and the usual metal build up on the sprue side was not maintained.

Effect of Sprue/Screen Distance

Experimental casts with a fixed sprue height of 7 in. were poured with sprue screen distances at 3, 8, 13½ and 24 in. and the pouring temperature maintained at 710 deg. C. See film strips 6. 7. 3 and 8, and Table 3. The results of these tests showed that the following effects occurred:—(*a*) Initial penetration occurred at all sprue to screen distances with the exception of the maximum, *i.e.* 24 in. film strip No. 8; (*b*) a build up of metal on the sprue side of the screen occurred at all distances; (*c*) a pool on the casting side of the screen was observed in all casts except the one with a 24 in. sprue to screen distance. The pool occurring in the 3 in. sprue to screen experiment was much narrower than seen previously; (*d*) no visible air entrapment could be observed; (*e*) the clean-up time was greatest when the sprue to screen distance was 3 in. The time was only slightly less with a 24 in. sprue to screen distance, and (*f*) a jet effect was noted at all sprue to screen distances, but the time this effect persisted was much longer when the sprue to screen distance was 3 in.

Results indicate that screens some distance from the sprue function more uniformly due to a steady build-up in the screen well on the sprue side of the screen. This build up occurs without penetration of the screen and is probably due to the reduction in the velocity of the stream. Johnson, Bishop, Pellini[7] have shown that the velocity falls off rapidly with increasing runner length, up to a critical length 12 to 15 in., above which, it is constant.

It can be seen from Table 3 that the clean-up times have varied to a greater extent than occurred in any of the previous experiments. It would be expected that the times should be less as the distance from screen to casting is reduced and less metal is required to fill the runner from screen to casting. The results show however that this factor does not apply to experiment No. 8, *i.e.*, 24 in. sprue to screen distance. In this case there was no initial penetration of the screen and the build up on the sprue side of the screen must have taken a longer time. Confirmation of this fact was obtained by measuring the time that the jet effect was taking place. It can be seen from Table 3 that the jet effect time is affected by the flow patern, *i.e.*, when initial penetration does

TABLE 1.—*Effect of Metal Temperature.*

Experiment and film strip number.	Alloy.	Casting temp., deg. C.	Initial penetration of screen	Build up on sprue side of screen.	Air entrapment on sprue side of screen.	Clean-up time, *i.e.*, first metal to tranquil flow, sec.	Pool on casting side of screen.	Jet effect.	Number of tests.
1	L.51	660	Yes	Yes	No	1.3	Yes	Yes but limited	1
2	L.51	680	Yes	Yes	No	1.6	Yes	Yes	1
3	L.51	710	Yes	Yes	No	1.4	Yes	Yes	2
4	L.51	760	No	Yes	No	1.5	Yes on 1 no on 2	Yes	2

Experiments 1-4, sprue height 7 in. Distance from sprue to screen 13¼ in.

not occur, the jet effect time will be less than indicated by the total clean-up time.

Flow behaviour using magnesium/zirconium alloy (DTD.708) ZRE.1.

Casts were made in ZRE.1 to see if the results would be similar to those observed with LM 23. The sprue height was kept constant at 24 in. and the screen positioned 13¼ in. from the base of the sprue, all casts were made with a casting temperature of 770 deg. C. The first cast was made into a sulphur-inhibited mould, but the metal flow could not be clearly photographed due to fumes from the burning sulphur. Subsequent casts were poured into moulds made with aluminium moulding-sand sprayed with a talc/boric dressing.

The behaviour of ZRE. 1 was found to compare reasonably well with LM 23 alloy cast under similar conditions. See film strips 5 and 9. In the case of ZRE. 1, some initial penetration of the screen can be seen, but the characteristic filling of the screen well on the sprue side, is typical of that with the LM 23 casts.

Some additional experiments were made with a ball of wire-wool in the well on the sprue side of the screen, and it was found necessary to secure the wire-wool to prevent it floating in the well. The effect of the wire-wool was effectively to disperse the initial metal stream, which allowed the screen to pass metal through the maximum number of screen holes.

Conclusion

From the experiments carried out, it has been found that the flow of magnesium and aluminium alloys through screens is different from what would be expected by observing the flow of water or mercury. The pattern of metal flow can be broadly divided into two categories:—(*a*) with initial penetration of the screen and a non-uniform flow through the screen; (*b*) with no initial penetration, and a uniform flow through the screen.

The type of flow pattern appears to be affected by the surface tension of the metal stream, the metal temperature, and the velocity at the screen. From a practical viewpoint, it would seem that a uniform flow with the minimum amount of turbulence and exposed metal would be the ideal to aim for. To achieve this, it would be preferable to place the screens as far from the sprue base as possible, or to use a ball of wire-wool in the sprue side of the well. The build up at the screen is undoubtedly beneficial, as it ensures that the runner system is full to the height of the screen-well, from the sprue to the screen.

It is reasonable to assume that some air is bound to be trapped between the "watering can" streams, if this air does not escape *via* the interstices of the sand it could be trapped in the runner. The space at the top of the screen-well, *i.e.*, above the height of the runner, could also be a source of entrapped air and it would seem that a vent would be useful off the top of the well. The most important thing from the foundryman's point of view is the effect of screens on casting quality. Not all light alloy founders are in favour of screens, and this is principally due to the large surface-area exposed as the metal stream passes through the screen. In view of these doubts, it would be of interest to carry out further experiments to assess the relationship of flow pattern to metal quality.

Acknowledgments

Thanks are extended to the directors of Bristol Siddeley Engines, Limited, for permission to publish this paper and also the central photographic department for invaluable assistance with the photo-

TABLE 2.—*Effect of Sprue Height (L.51 cast at 710 deg. C.).*

Experiment and film strip number.	Sprue height, in.	Initial penetration of screen on sprue side of screen.	Build up on sprue side of screen.	Air entrapment on sprue side of screen.	Clean-up time *i.e.*, first metal to tranquil flow. sec.	Pool on casting side of screen.	Jet effect.	Number of tests.
3	7	Yes	Yes	No	1.4	Yes	Yes	2
5	22	No (Result in 2 out of 3 tests.)	Yes	No	1.1	No	Yes	3

TABLE 3.—*Effect of Sprue to Screen Distance* (*L.51 cast at 710 deg. C. Sprue height 7 in.*).

Experiment and film strip number.	Distance from sprue base to screen, in.	Initial penetration of screen.	Build up on sprue side of screen.	Air entrapment on sprue side of screen.	Clean-up time, sec., *i.e.*, first metal to tranquil flow.	Pool on casting side of screen.	Jet effect and time, sec.	Number of tests.
6	3	Yes	Yes	No	1.85	Narrow pool	Yes 1.2	1
7	8	Yes	Yes	No	1.4	Yes	Yes 0.625	2
3	13½	Yes	Yes	No	1.4	Yes	Yes 0.625	2
8	24	No	Yes	No	1.74	No	Yes 0.625	2

graphs. The Authors would also like to thank Dr. E. Emley (Magnesium Elektron, Limited) for helpful criticism.

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American Letter

Corrosion Engineers' Conference

The US National Association of Corrosion Engineers, North-east Region, held its 12th annual conference from October 11 to 14, at the Prichard Hotel, Huntington, West Virginia. In addition to works visits, technical sessions were held at which 33 papers were presented. Of these, three were of interest to the foundry industry in general, namely, "High-temperature Furnace Corrosion," by R. D. Merrick; "Review of Russian Literature on High-temperature Chlorine Conversion," by R. E. Gachenbach, and "High-temperature Sulphur Corrosion," by R. A. Miller. In the first, Mr. Merrick dealt with severe corrosion which occurred on tubes and tube supports of 25 Cr/12 Ni alloy steel in a furnace operating at metal temperatures from 870 to 1,150 deg. C. Corrosion to a depth of ¼ in. had occurred in a period of six weeks. This furnace was operating under good firing-conditions with little sulphur in the fuel gas and an investigation of the problem revealed that the corrosion was caused by contaminants deposited on the furnace parts, which catalyzed oxidation of the metal. In his review of Russian literature on high-temperature chlorine conversion, Mr. Gachenbach dealt with the research carried out during 1954/56 by the Russians. The review revealed the effect of temperature, water-vapour, air and flow rate of chlorine on the corrosion rate of aluminium, Armco iron, carbon steel, cast iron, copper, lead, nickel, stainless steel and tantalum at temperatures up to 650 deg. C. In Mr. Miller's paper on high-temperature sulphur corrosion, the author gave a review of the corrosion of high-temperature alloys exposed to sulphur-bearing gases under reducing and oxidizing conditions. Studies conducted at the Battelle Memorial Institute, private laboratory data and case-histories of the corrosion problem were also described.

US Statistics for Bronze Ingot

US brass and bronze ingot-makers are having a good year according to Mr. N. Lavin, president of the Brass and Bronze Ingot Institute. He credits the ingot industry's research and education programmes with turning fabricators back towards copper alloys. Average monthly shipments of brass and bronze ingot during the first half of this year were 22,097 tons, only slightly lower than the 1959 average of 22,880 tons. Ingot shipments underwent a steep drop in July, reaching an 11-year "low," but returned to normal. Mr. Lavin reports increased uses of brass and bronze for appliances, aircraft and missile parts, agricultural tools, and railway manufactured products, whilst use continues strong in building and marine equipment. Examples cited include agitators for washing machines—to resist corrosion—and bronze fittings and hinges to replace zinc alloys in refrigerating plant, because of low-temperature brittlement factors. A major railway in the US is specifying brass for cast sleeve-bearings or brass as superior to aluminium because of better heat-transfer, improved conformity to shape and better self protection as the bearing wears; use is increasing in the railway yards for pole hardware switching devices and control mechanisms.

Ingot Shipments lowest in 11 Years

US despatches of brass and bronze ingot in July slumped to their lowest level in 11 years as a result of poor demand. The July outgoings of copper-base alloy ingot, as reported by the Council for the Ingot Brass and Bronze Industry, totalled only 14,887 tons. The previous "low" occurred in 1949, when the output in August totalled 14,194 tons and the average monthly production for the year was 14,637 tons. The July figure is lower than the average monthly production of 21,496 tons over the first six months of this year. In addition to normal vacation shutdowns at brass and bronze ingot-making plants during July, the abnormally-low despatch figure stems principally from poor demand for ingots from castings manufacturers. Because of the outlook for surplus world copper production, consumers of copper-base alloy products have been buying on a hand-to-mouth basis in expectation of weakening in the copper price, particularly scrap copper, which would result in lower brass and bronze ingot prices.

GEORGE DENHAM & COMPANY, LIMITED, engineers and ironfounders, of Low Mill Foundry, Darlington, is to move its works to Longfield Road, Darlington.

SOVIET production of steel and iron tubing has fallen well behind schedule and there is a considerable lag in the construction of plant capacity according to recent Soviet Press reports.

*Craft Apprentices' Corner**

False Joints in Moulding Practice . . .

. . . with "Tubal Cain" on the Job!

I'm stood watchin' a young feller makin' a little job just t'other day (not one o' me own lads, by the way, I'm in another foundry at the time) an' I'm interested in the performance 'cos while I'm stood watchin' 'e's knocked 'is cope out twice and is now rammin' it up for the third time. 'E's tryin' to lift a deep, steep-sided cod on the cope, so far without success. Now I'm not particularly interested in why 'e can't lift the cod; I can see *that* plain enough; what I *am* wondering is why 'e should consider it necessary to *have* such a deep cod. As I see it from where I'm standing it seems 'e's makin' a three-part job, an' my guess is that 'is middle part is much deeper than it need be. Anyway, when 'e tried to lift the cope for the third time the inevitable happened, so in desperation 'e knocked the whole lot out, apparently with the intention of makin' a fresh start. It was when I saw the pattern that I twigged what the trouble was, so I wandered over to see if I could help. "Ain't 'aving much luck, are you, son?" I says, "nasty lift that, y'know." "I've found that out already," 'e says, "an' yet I don't see why it shouldn't lift." "Lots o' reasons," I says, "but tell me first, who was it told you to make it three-parted?" "Nobody told me, sir," 'e says, "I just can't see 'ow it can be made any other way." "Well son," I says, "it's your job an' you've got the makin' of it. But me, well I think I should false-joint it." O' course, 'e gave me the old vacant stare, but 'aving the pattern before me it didn't take long to explain what I meant. 'E was a pretty sharp lad an soon cottoned-on, so I left 'im to it an' carried on with my tour.

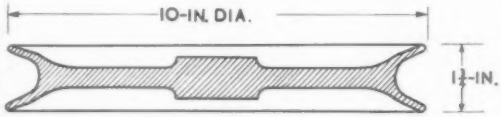


FIG. 1.—*The grooved-pulley offers the simplest example where a false joint facilitates moulding.*

What it's all about . . .

A false joint may be described as a joint parting a mould section which is independent of and free from the main mould parts, and which may if necessary, be lifted away from them and replaced at will. I say, if necessary, because this is not often done; firstly because such an operation would require careful forming and reinforcing of the "false" section (to avoid collapse), and secondly because of the danger of misplacement when restoring it to the mould. However, if properly carried out, there is no reason why the operation should not be successful—the point is that there may be other more convenient ways of achieving the same results. The standard example quoted to illustrate the use of a false joint, is a grooved pulley made from a split pattern, but don't be deluded into thinking this is its only application—far from it. Indeed, in general foundrywork one meets up with it quite often, and in somewhat varying forms. It is, therefore, essential to know and understand the basic principles of its use and then to adapt these

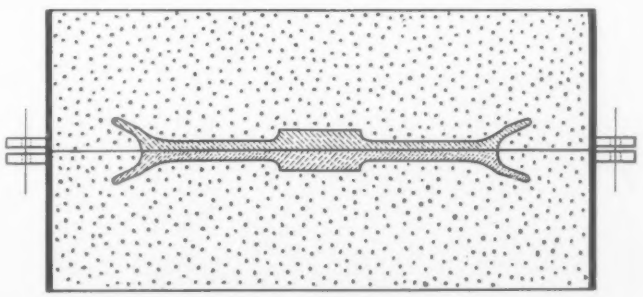
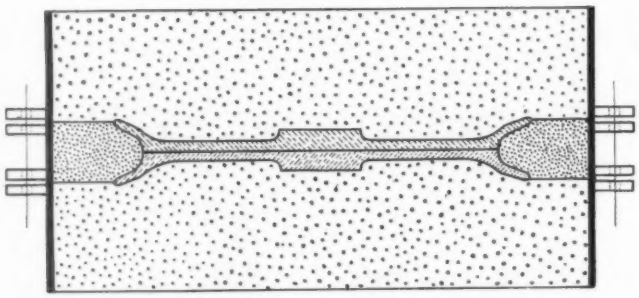
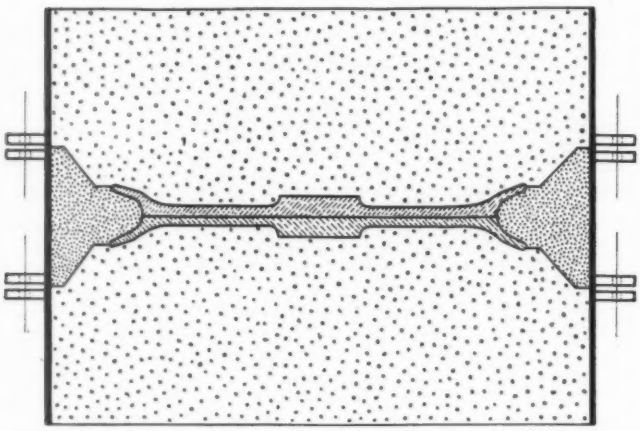


FIG. 2.—*It would be impossible to achieve a clean strip of the pattern from a mould rammed up as illustrated.*

* Apologies are made to translators for the use of the vernacular where it occurs in the article.





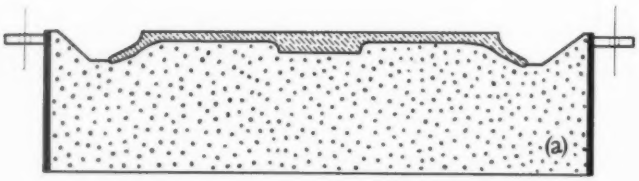


FIG. 3 (*top*).—*This solution to the problem posed by Fig. 2 is theoretically possible, but of doubtful value in practice.*

FIG. 4 (*centre*).—*Meeting one objection to treating this moulding operation as a three-part job, this method creates a further difficulty.*

FIG. 5 (*a*).—*See facing page.*

principles to different jobs as they come along. For those of you who may not be quite familiar with the method, the following is an outline of the sequence of operations. Fig. 1 shows a cross-section through a typical grooved pulley, the pattern being split through the centre of the groove. Note particularly the dimensions.

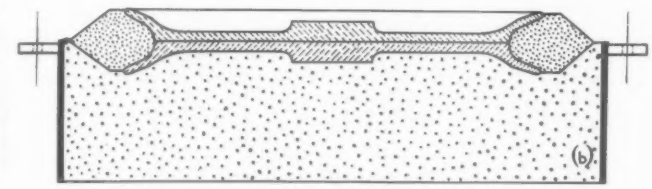
Because it is a split pattern you might be tempted to ram the job up in the usual way, forming the mould-parting level with the parting line of the pattern. When attempting to withdraw the pattern you would realise that the rims of the pulley were undercut and the pattern, therefore, could not be released from the sand.

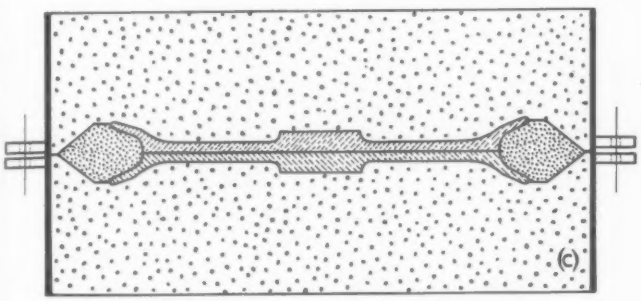
Too bad! Knock it out and start again, but let's think about it a little more this time. It's pretty obvious that a separate part must be used for the groove and you might, therefore, be inclined to think in terms of a three-part job. A three-part job would provide a solution to the problem, but in order for it to be at all effective and convenient you would need a very shallow box for the middle part.

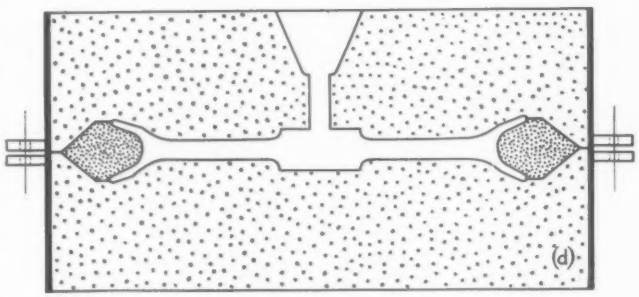
We don't usually have such boxes even in well-equipped foundries, and even if we did the depth of the box would be so shallow (in relation to its surface area) that the sand would almost certainly drop out during handling. If a deeper box is to be used for the middle part, the operations of forming suitable joints and "lifting" cods become too cumbersome for economical production. Better to forget the three-part method altogether.

It will by now be realized that it is essential to form a joint at the rims of the pulley in order to withdraw the half patterns; it would also be seen by now that the part of the mould constituting the groove of the pulley must be "loose" or independent from the main joint. It should also be obvious that a proper seating must be provided for this loose part—it cannot hang in mid-air without support! Here then, comes in your false joint. The simplest sequence of operations would be as follows: The bottom half of the pattern is placed on a ramming board, and the bottom part of the mould rammed up in the usual way, and turned over. The joint is formed by cutting down to the rim of the pulley.

It is essential to form this joint as symmetrically as possible (no bumps nor undercuts) and to sleek it quite smooth because failure to do so will almost certainly lead to trouble later on. Parting powder is now dusted over the joint face, the top half of the pattern placed in position and the false joint formed by tucking sieved facing-sand into the groove of the pattern with the finger-tips, after-







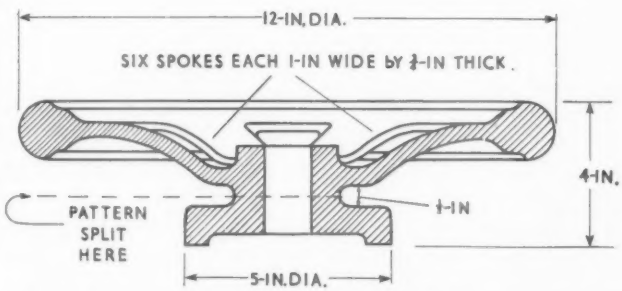


FIG. 5.—(*a*)—*see facing page*—(*b*), (*c*), (*d*). *This figure illustrates the successive stages in the production of a mould by using the false-joint technique.*

FIG. 6 (*bottom sketch*).—*This cross-section through a spoked hand-wheel carries the method described in the text a step further to a more complex casting.*

wards cutting away the surplus sand level with the upper rim, and again sleeking the part thus formed to a nice smooth finish.

Dust this independent section with parting powder, position the top box and ram up as usual.

So far, so good; now to remove the pattern. Lift off the top box and withdraw the half-pattern—no trouble there. But wait—in order to withdraw the remaining half-pattern we must first remove the independent section. Now if we attempt to lift it from its seating it will collapse because we have not reinforced it in any way, hence we must resort to other means. Replace the top part, roll the complete mould over, and lift off the top box (originally bottom) in order to withdraw the remaining half-pattern. "Tube" a runner through from the centre boss, clean the mould free from any loose sand, close on, and make ready for pouring.

. . . a further step

Simple, eh? So it should be, it's a very simple example. And yet it illustrates all the basic principles of the use of a false joint. The only basic variation you can possibly have involves completely removing the false joint from its seating for the purpose of withdrawing the pattern as mentioned previously. When this is necessary (and it often is) we have a choice of two methods, each of which has its advantages and disadvantages for specific jobs. The first method is to provide suitable reinforcement for the independent section to enable it to be lifted out and replaced at will—such reinforcement may be in the form of iron rods, a cast grid with prodders and lifting loops, or a metal plate with lifting loops. The second method is to lift the section formed by the false joint with the top. In this case, assuming that the mould top has been lifted off and the top half-pattern withdrawn, a suitable adhesive such as clay-wash or coregum is applied to the upper surface of the free section and the top replaced. After a few minutes standing for the adhesive to become fully effective, lifting off the top again should bring this section with it; and once having been successfully

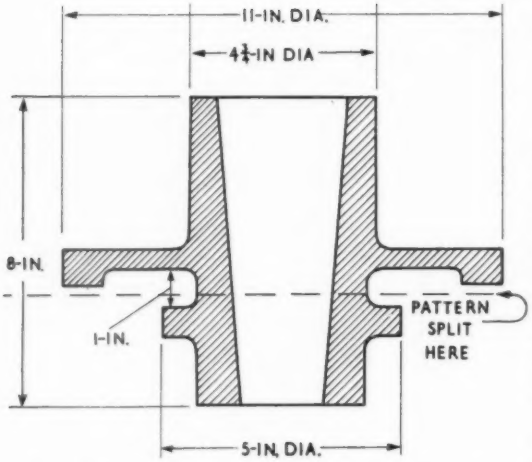


FIG. 7.—*Cross-section through a coupling illustrates another suitable application for false-joint moulding.*

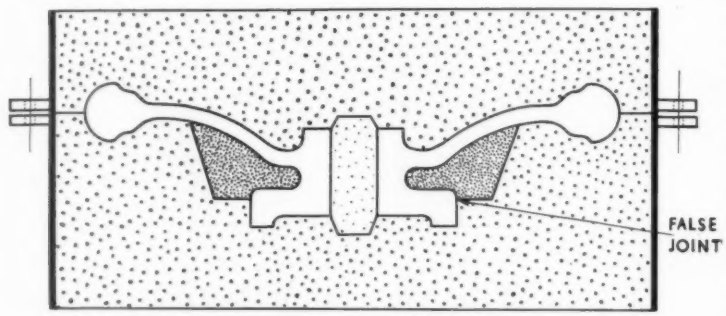
lifted it can subsequently be more firmly secured to the top by the use of brads, nails or spikes.

Very simple . . . when you know how

Thus one can see that the basic principles of the use of a false joint are really quite simple, but like so many other aspects of foundry practice it is often easier said than done, and skill in the actual moulding operations is an essential part of success. One of the important points is that the free section formed by the false joint must not only rest on a suitable seating, but must also be secured against misplacement by the molten metal during pouring operations. If this point is borne in mind it means that the technique will need to be varied to suit different jobs. Take, for instance, the two examples of machine-tool castings shown herewith (Figs. 6 and 7). Again, note particularly the dimensions of each casting.

In each case a false joint may be used to mould the narrow neck of sand. Taking the hand-wheel casting first, a cross-section through the completed mould—disregarding the running and feeding system—would appear as illustrated in Fig. 8, and as the free section in this case is resting on its seating and is touching the mould top (*i.e.* between the spokes of the wheel) it is quite secure for pouring, and the job may, in fact, be quite safely poured even if inverted to the position shown. Quite clear? Good! Consider now the coupling casting. Adopting the same tactics as before would result in the mould appearing as in Fig. 9 where the free section is resting on its seating but is *not* touching the cope, and would therefore be lifted out of position by the pressure of the molten metal from underneath. Here, then, a somewhat different approach is called for, and the false joint section would need to be made much larger in order for it to bear against the mould box as shown in Fig. 10.

If the job were inverted for



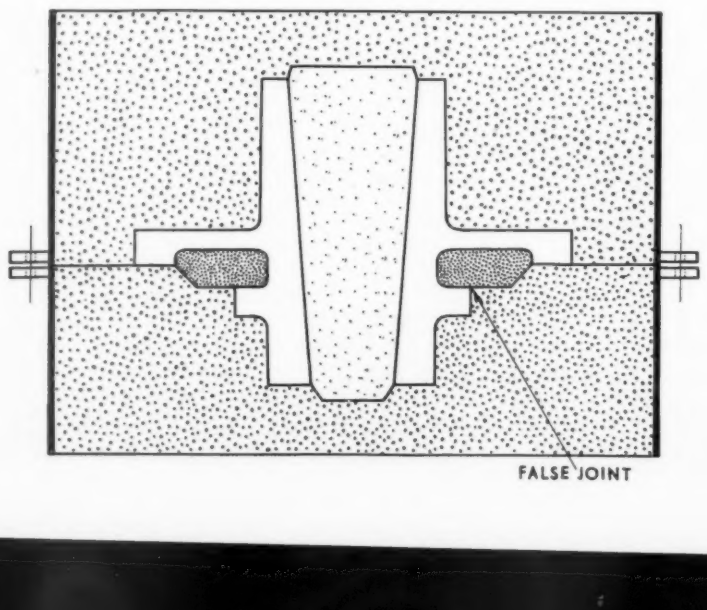


FIG. 8 (*upper*). — *Mould cavity for the spoked hand-wheel in Fig.* 6 *is successfully made with the use of the procedure recommended by the Author.*

FIG. 9 (*lower*).—*A mould similarly produced for the coupling incorporating an independent section* (*created by a false joint*) *but inadequately supported.*

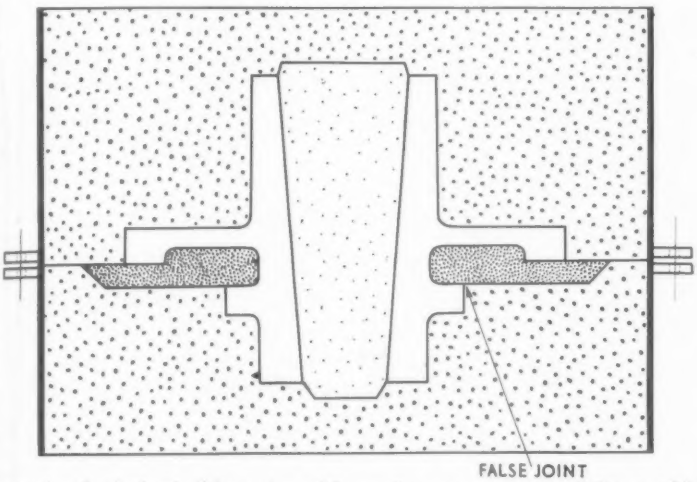


FIG. 10.—*The weakness in the mould (shown in Fig. 9) has been overcome by making the independent section with a substantial "print."*

pouring (as before), this part would now be secure.

There you are then, that's a pretty comprehensive outline of the use of a false joint—you'll come across it very often in the jobbing foundry, and the best bit of advice I can give you is, "Use your imagination," particularly before you start to mould. Think carefully about every step in the overall sequence and satisfy yourself that you understand exactly what you have to do. In this way you will steer clear of the hidden pitfalls such as the free section sticking firmly to the surrounding sand instead of releasing itself, or loose sand falling into an inaccessible part of the mould from whence it is impossible to remove it, or incorrect re-positioning of the section after having removed it from its seating, and a few others besides. But it's all in the game, and useful experience, too!

The Valve Industry

The chairman of the British Valve Manufacturers' Association, Mr. F. Burgess, in his report to the twenty-first annual general meeting, referred to the "coming of age" of the BVMA and to the recent rapid growth of membership—now totalling 69 companies manufacturing steel, iron and/or non-ferrous valves.

The chairman, referring to the Prime Minister's exhortation in July 1960 to industry to export more, reminded members that the Association had embarked on a long-term study on overseas sales promotion. A report on the subject had provided facts and suggestions for members to consider, and the Association stood ready to continue to assist members in planning their export campaigns.

He also spoke of the significant accomplishments of the industry in the export field, whose valve exports were now running at an annual rate of £14,000,000; over one-third of the UK annual output of valves (£36,000,000) went overseas. He thought that those companies whose exports were at present small, could materially help in increasing the total, and urged that all and every valve manufacturer should aim at exporting at least one-quarter of his output.

Speaking of the activities of the Association in the technical field, Mr. Burgess mentioned the preparation of the BVMA Manufacturers' Standard Practice for Valves—a document in several parts covering aspects of standardization and rationalization within the industry, such as the establishment of preferred face-to-face dimensions of certain types of flanged valves—a feature of particular importance to valve users. Later sections of this code would deal with additional types of valves; for example, one on butterfly valves would shortly be drafted. The British Standards Institution had already adopted the section of the code dealing with cast-iron gate valves as the basis for the draft British Standard "Cast Iron Gate Valves for General Purposes."

ISI Special Meeting

By invitation of the Metallurgical Society of the American Institute of Mining, Metallurgical and Petroleum Engineers, the Iron and Steel Institute will be holding a special meeting in the USA and Canada in the autumn of 1961.

The provisional programme for the meeting provides for an official welcome in New York City on October 19, 1961, followed by visits to important works in the New York area. The party will then travel to Niagara Falls for visits to laboratories and works in the district in Canada as well as in the USA. The Council has also accepted an invitation from the board of directors of the American Society for Metals for members to attend the National Metal Congress in Detroit and to be guests at the annual banquet of the ASM on October 26. Cleveland, Pittsburgh, Bethlehem and Washington are included in the itinerary and a special programme is being prepared for the ladies.

At the conclusion of the tour, arrangements can be made for members to spend a few days sightseeing, visiting Philadelphia, and Princeton or Colonial Williamsburg and Charlottesville. Extensions will also be arranged to enable members to visit works in the Chicago district.

In addition to the normal sea and air routes for travel to and from the USA, aircraft will probably be chartered at substantially reduced rates, provisional dates for crossings being: to New York, October 18, and from New York, November 8, 1961. Full details are to be circulated in the spring of 1961.

A FURTHER ORDER for diesel buses has been received by Leyland Motors, Limited, Lancs, from the Ceylon Transport Board. This latest order, covering over 400 buses and worth £750,000, brings the total of Leyland vehicles operating with the Board to nearly 1,400. The contract was won in face of strong German and Japanese competition.

Equipment and Supplies

Safety Slings

Cable Covers, Limited, St. Stephen's House, Westminster, London, S.W.1, have recently introduced an improved design of "Talurit" safety sling, available in any length, width, and lifting capacity and with a wide variety of terminations, amongst which are shackles, reeving links, soft eyes, crescent thimbles and enlarged thimble eyes. The sling incorporates the firm's wire-rope mechanical splice, and is covered with special-grade PVC protectors which are oil and chemical resistant. It is claimed that with the new sling complete and thorough statutory inspection can be undertaken in a matter of minutes without the employment of any special tools or gear. Every sling delivered is accompanied by a proof-loading certificate.

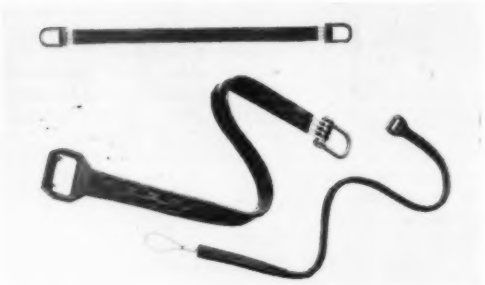


FIG. 1.—*Three designs of "Talurit" safety slings made by Cable Covers, Limited. The top illustration is of a four-wire sling with a shackle each end (for double suspension), the centre shows a four-wire sling with shackle at one end and reeving link at the other (for single suspension), and the bottom is a two-wire sling with a soft eye at one end and reeving link at the other (for single suspension).*

Resin Corebinders

Leicester, Lovell & Company, Limited, North Baddesley, Southampton, have developed resin corebinders specifically for use with the hot-box process. The new resins are similar in composition to those now supplied by the company's associates in the USA, and it is claimed that by using these, high-strength cores can be produced in 10 to 30 sec., depending upon core thickness. Other advantages claimed for cores produced in the hot box, using these newly-developed materials, are rapid and economical production cycles, high strength, good breakdown without metal penetration, excellent surface-hardness, low gas-evolution, and absence of damping back of cores in storage.

Crusher

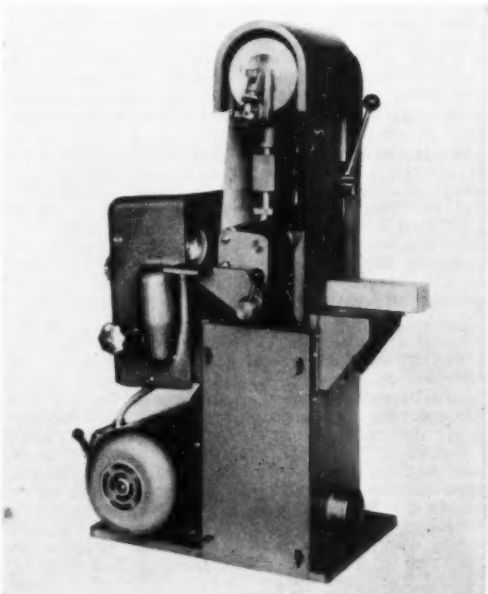
Provision of sales, spares, and servicing facilities throughout the British Isles are announced by Joy-Sullivan, Limited, of Greenock, Scotland, for the Joy-Hazemag impact crusher, manufactured by the Hazemag m.b.H., of Munster, Westphalia, Germany. Manufacture of spare parts will commence immediately in this country and in the near future the complete units will be made here. Applications of the crusher in the metallurgical industry are said to include the reduction of slag for the preparation of road metal, selective separation of metal particles from slags, and the reconditioning of moulding sand. The only moving part in the crusher is the rotor, mounted horizontally inside a rigid steel casing. At intervals along the rotor a number of impact bars of manganese-steel or other alloy steel are mounted and heavy impact plates of similar steel are pendulously hung above the rotor from the top of the casing. The crusher is manufactured in four series, each of which comprises a number of models of different capacities, giving outputs of up to 500 tons per hour. In certain cases, size reduction ratios of more than 100:1 are possible; ratios of 40:1 are normal.

Belt Grinding Machine

Addison Tool Company, Limited, from Marshalsea Road, London, S.E.1, is marketing the Loeser centreless belt-type grinding machine shown in Fig. 2. The machine, which it is said, can handle any type of metal, wood or plastic material regardless of length or shape, features infinitely-variable feed control—from 0 to 82 ft. per min—and changeover from clockwise to anti-clockwise rotation. The maximum width of belt to be used is 6 in., belt speed being 85 ft. per sec. The frame is a one-piece casting with a high resistance to warping and tension. Belt tension is adjusted by means of two tubular guides with spring-loaded suspension, and the drive to the belt and feeder unit is by a 2½-h.p. motor. The feeder unit is driven from a worm gear through a universal shaft.

Mould-drying Equipment: Woodward Bros. & Copelin, Limited, makers of the "Gem" mould-drying torch, have recently moved from Croydon to Lime Tree Road, Matlock, Derbyshire, 'phone: Matlock 3055.

FIG. 2.—*Loeser centreless belt-type grinding machine, marketed by the Addison Tool Company, Limited.*



Notes from the Branches

Tees-side

Over 200 who attended the annual dinner of the Tees-side branch of the Institute of British Foundrymen, held on November 11, were told by Mr. G. R. Shotton, the president, that the branch was particularly prominent in apprentice-training affairs. The apprentice competition which the branch had run for many years was a model which other branches had tried to follow, but which none had bettered, he thought. Furthermore, he added, the national apprentice competition which was now being operated annually to select apprentices to represent Great Britain in the European foundry apprentice competition owed its success very largely to the pioneer work done on Tees-side. This country owed a great debt of gratitude to enthusiastic members of the branch who had so freely given their time and personal effort in organizing and running the annual competitions.

Foundrywork on Tees-side was still a craftsman's job, the president continued. Very large and intricate castings formed a major part of the production and it was work that did not lend itself readily to mass-production methods. On the other hand, local firms had made full use of various labour-saving devices to enhance the production of castings which still had to be made by traditional procedures.

Earlier, Mr. Shotton and other guests and their ladies had been welcomed to Tees-side by the branch president, Mr. F. Potts, works manager of Cochranes (Middlesbrough), Limited, who took the chair at the dinner.

Bristol

The Bristol branch opened its 1960/61 session with a lecture on the "Application of Shell-moulding with Special Reference to Copper-alloys," by Mr. W. W. Glick, the meeting being held at the works of Newman, Hender & Company, Limited, at Woodchester.

Earlier, the new branch president, Mr. L. B. Gabb, stressed in his address the need for the foundry to "sell itself" to the designer and engineering personnel. It was pointless, he said, to apologize when faults occurred in castings, and to take but little credit when good castings were produced. It was necessary for the foundry to make clear to the designer and production staff just how much could be accomplished—as, for example, when a casting was designed which would give maximum performance consistent with ease of production in the foundry and also had satisfactory machining qualities. The foundry industry still had an excellent outlet for its products, if all concerned were consulted before designs were committed to paper.

In presenting his paper, Mr. Glick outlined the economic advantages which could result from the use of shell moulding for many types of casting, and illustrated how ideal types of structures could be obtained by attention to sand condition details.

Special Meeting

On Friday, October 28, a new form of meeting was held at the Royal Hotel, Bristol. On this occasion Mr. Balme, a branch member, gave a short paper on the production of a theoretical type of valve casting, incorporating an integral bracket, which was to be produced for convenience in grey cast iron; weight would be approximately three cwt. Comment on the paper was then asked for, and members joined in a very interesting discussion, ranging over metal composition, moulding materials, running systems and patternmaking.

For the purposes of producing the casting, it had been indicated that dried-sand moulds were preferable to green or CO_2 moulds as "sand wash" defects could occur more easily in green sand. Dried-sand moulds it was said, generally showed greater rigidity than CO_2 moulds, and at the same time, less likelihood of sand-buckle defects would be encountered with dry sand.

Discussion

Several members were of the opinion that CO_2 sand moulds would be suitable for this type of casting,

Photograph taken at the IBF Tees-side branch Social Evening at Teesdale Hall, Thornaby-on-Tees, on November 11. Present are: Mr. G. R. Shotton (third from left); Mr. F. Potts, branch president (fourth from right); Mr. Frank Shepherd, past-president (first from right), and Mr. G. Lambert, national secretary, and Mr. G. Morris, branch secretary, (rear, left, and right respectively), nearly all of whom were accompanied by their ladies.

Notes from the Branches

and would ensure a very satisfactory surface finish. It was agreed, however, that a fairly fine sand would be required otherwise there was the possibility of burning-on taking place. Most members were not in favour of blacking the moulds due to the poor surface finish which could result from uneven blacking of the surface of the mould.

There was considerable discussion on the merits and otherwise of forced chilling of the metal. It was the opinion of several members that carbon blocks often gave excellent results when used as chills, and that where metal chills are used, it is essential that these are clean and free from rust or moisture. One member indicated that portions of old files could make excellent metallic chills, the fluting on the file face enabling gases to be removed quickly, thus preventing blowing from taking place. Another member said he had seen the deliberate incorporation of small fins on the casting face, this being done, presumably, to increase heat loss to the mould face, thus ensuring progressive solidification.

An interesting sidelight came in the discussion when members attempted to differentiate between chilling and densening. It was finally agreed, however, that chilling alters the basic metallurgical structure of the iron while densening does not. The use of coal-dust in dried-sand moulds was not entirely favoured, but members thought that small quantities of pitch could be used, since, they claimed, not only was moisture pick-up lessened in such sands, but drying time was also reduced. Mr. C. R. Porter in proposing a vote of thanks, said the evening had been most instructive and that much valuable discussion had been aroused by the paper.

North-east Lancashire Section

The gratifyingly high figure of over 90 members and guests, with their ladies, attended the annual dinner of the North East Lancashire section of the Institute on Saturday, October 29. The function was held in the Keirby Hotel, Burnley—a new hotel—with Mr. D. Kershaw, section president, in the chair. Amongst the guests were Mr. F. W. Nield, Lancashire branch president, and Mrs. Nield. "The Queen" was the only listed toast of the evening, but the proceedings, amongst foundrymen in such an intimate section, were certainly in no way marred by the lack of formality, and "a good time was had by all," was the JOURNAL reporter's laconic, hackneyed but expressive, summing up of the event.

Australia (Victoria)

The September meeting of the Australia (Victoria) branch of the Institute was held in the Lecture Theatre, Metallurgy School, Royal Melbourne Technical College, when a lecture was given by Mr. K. Brutton and Mr. G. Saunders. The paper covered a brief outline of the extent of the non-ferrous materials trade; the merchant and the manufacturer, and the relationship of virgin to secondary metals. A discussion of the paper followed.

AGREEMENT HAS BEEN REACHED for the transfer in the immediate future of the industrial boiler activities of Sunrod, Industrial, Limited, heat-exchange engineers, etc., St. Mary Cray (Kent), to Head Wrightson Processes, Limited, a subsidiary of Head, Wrightson & Company, Limited. Sunrod will in future concentrate on producing and selling heat exchangers.

Book Review

Decorative Cast Ironwork in Great Britain, by Raymond Lister. Published by G. Bell & Sons, Limited, York House, Portugal Street, London, W.C.2, price 36s. 2d. post free.

It is quite possible that the author had difficulty in choosing a suitable title for this very interesting book. It stands on its own, whereas earlier accounts of decorative work in cast iron are usually to be found only as but a part of a general history of iron and steel. Mr. Lister has kept his subject severely to cast iron, and confined himself to unmachined products. After a well-balanced introductory chapter, he deals with the technique of making castings and the practical foundryman can, without much loss, take this section's contents for granted. Some of them would object to the information that loam was always pronounced "loom" and may be surprised to learn that the shell-moulding process is sometimes referred to as "Cronizing." Rightly, the author includes a chapter on cast-iron ordnance as, though all guns were not decorative, a number were, and the introduction of cast cannon marked the beginning of the ironfoundry industry in this country. Immediately there followed the making of grave slabs and memorial plaques in burial grounds, firebacks and firegrates. Two museums are mentioned—the one at Woolwich which has a collection of guns and the John Every rooms in the Lewes Museum, but no reference is made to the one established recently at Coalbrookdale by Allied Ironfounders, Limited. The book rightly stresses that the Victorian foundrymen showed extremely bad taste in the over-ornamentation of their castings, but there must have been a good market for such productions.

A book of this character must have considerable interest for the collector and amongst pieces mentioned are miniature decorative iron fireplaces which were used as travellers' samples. Two uses of cast iron are not mentioned, namely coffin handles and mincing machines, which are still retained as foundry running lines.

The range covered by the book is extremely wide and an enterprising foundry owner might profitably resurrect some of the past applications for decorative iron castings. For example, refuse boxes of cast iron would give a much longer life than those of sheet metal, whilst for lamp standards the artistic world would still seem to be solidly in favour of the cast variety.

The book carries in addition to the excellent illustrations on art paper a large number of sketches made by the author. It is a work which includes, rightly, much about the well-known masterpieces of the industry and its personalities—Wilkinson, Abraham Darby, the Adams Brothers, and Dr. J. Roebuck. The references are commendably complete, and will greatly help those who wish to delve more deeply into the subject.

V. C. FAULKNER.

Industrial Safety-poster Awards

Prizes in the annual safety-poster competition, held by the Distillers Company, Limited, have been awarded to Mr. T. Dunn; Mr. S. G. Jones, and Mr. A. Gallagher.

The subject of the competition was Better Housekeeping. The firm reports that the competition is attracting a growing number of original and effective entries from a wide variety of workers and has established itself as a valuable part of the company's industrial safety measures. A number of requests have been received from abroad for copies of last year's winning posters.

Dinner

ASSOCIATION OF LIGHT ALLOY REFINERS AND SMELTERS

Mr. W. W. Kee presided over the annual dinner of the Association of Light Alloy Refiners and Smelters which was held last Thursday at the Trocadero. The toast of The Association was proposed by Mr. H. G. Herrington, C.B.E. (chairman of the Aluminium Industry Council), the response being given by the chairman of ALAR, Mr. Kee. Mr. K. R. H. James proposed the toast of "The Guests" to which Sir Geoffrey Bourne, G.C.B., K.B.E., C.M.G. (director-general, Aluminium Development Association) replied. Guests were present from the Ministry of Aviation (Mr. D. L. Haviland, C.B., and Mr. W. W. Abson); the Board of Trade (Mr. D. Carter and Mr. S. Golt); Light Metal Founders' Association (Mr. W. Brown, Mr. L. Fletcher, Mr. G. A. Rider and Mr. W. D. Mendham); Aluminium Development Assoication (Mr. W. Brining, F.C.A., and Mr. G. Meredith); Magnesium Industry Council (Mr. E. Player, C.B.E.). The Press was represented by Mr. V. C. Faulkner, Mr. D. Chapman, Mr. L. H. Tarring and Mr. L. G. Beresford. Most of the guests were accompanied by their ladies and following the dinner there was dancing to the music of Neville Hughes' Orchestra. The cabaret artistes were Harry Smith-Hampshire and Doreen Casey (ballroom dancing exhibitions) and Esme Levants (magician).

SMITH & DAVIS, LIMITED, manufacturers of Beacon brassware, Wednesbury, Staffordshire, and the Wednesbury Tube Company, Limited, were awarded bronze stars for packages in Starpacks 1960 competition organized by the Institute of Packaging.

Die-casting Discussion Group

Nearly 200 die-casting engineers, mainly from the Midlands, met at the Birmingham New College of Technology last month to discuss the technique of gating and venting of pressure-die-castings. This meeting, the first of four to be organized by the Zinc Alloy Die Casters Association this winter, was under the chairmanship of Mr. Reg. Turner (of Metal Castings, Limited), the discussion being opened by Mr. Frank Claxton (of Wolverhampton Die Casting Company, Limited), assisted by Mr. J. H. Newman (of Birmingham Aluminium Casting (1903) Company, Limited), and Mr. R. Bryan (Metal Castings, Limited).

The meeting took as a basis for its discussions the paper on gating presented by Mr. Ralph Wilcox of the American Smelting & Refining Company, Limited, presented at the Third International Die Casting Conference at Stresa. The discussion, however, quickly showed that while the traditional methods of gating are well known and widely adopted, much thought is being given to completely new ideas. Venting methods, direction of metal flow into the die and gating for vacuum die-casting came in for particular attention. There is little doubt that the meeting provoked consideration of general gating techniques and will lead to some of the fresh ideas being tried out.

The large attendance at this meeting is further evidence of the very keen interest being shown in the development of die-casting. Future meetings will be held alternatively in London and Birmingham, of which details can be had from the Zinc Alloy Die Casters Association, 34, Berkeley Square, London, W.1.

Rear-Admiral A. J. TYNDALE BISCOE has been elected a director of Blaw Knox, Limited.

Russians visit British Bath Factory

Four Russian technologists in porcelain enamelling recently toured the British Bath Company's factory at Greenford, Middlesex, believed to be the largest of its kind in Britain and probably in Europe. The visitors, escorted by Mr. Geodge R. Webster, director and general manager, were shown every stage of the production line —which is largely mechanized, and from which is turned out an average of 4,000 baths per week. The Rusians were particularly interested in the company's enamelling processes.

The British Bath Company is a member of the Allied Ironfounders Group, and earlier in the week, the vistors had toured the factories of another Allied Ironfounders' company —Leisure Kitchen Equipment, Limited, at Long Eaton, Nottingham. The tour was arranged by the Institute of Vitreous Enamellers, who themselves sent a delegation to Russia last year.

In the illustration alongside Mr. George R. Webster, director and general manager of British Bath Company, Limited (right), is seen showing Mr. I. P. Ivchenko of Gorki, Mr. A. Y. Matiash of Kharkov, Mr. Y. P. Yushchenko of Leningrad, and Mr. P. A. Ivanov of Moscow, part of the pattern-making process in the Greenford Bath Factory.

Personal

Mr. R. E. M. HOLMES has been appointed sales manager, of Pantak, Limited, Windsor, Berks.

Mr. R. W. DUNSIRE and Mr. J. C. LEITH have been appointed directors of the Distillers Company, Limited.

Councillor D. J. O'NEILL, of Sheffield City Council, has been appointed to the East Midlands Gas Consultative Council.

Mr. A. N. BICKET has resigned from the board of Barrow Haematite Steel Company, Limited, a subsidiary of Arusha Industries, Limited.

Dr. R. A. MOTT, consultant to the British Coke Research Association, Chesterfield, has been elected president of the Coke Oven Managers' Association.

Mr. J. CAMERON, quality and methods controller, and Mr. T. A. COSH, chief metallurgist, have been appointed to the board of Alston Foundry Company, Limited, Cumberland.

Mavor & Coulson, Limited, mining-machinery manufacturers, Glasgow and East Kilbride, have appointed Mr. ROBERT M. CLIVE general sales manager. He will operate from the head office in Glasgow.

Mr. W. KELWAY-BAMBER, of W. Kelway-Bamber, Limited, engineers, Victoria Street, London, S.W.1, has been appointed London agent for Jones & Foster, Limited, brassfounders, Ashted Works, Birmingham.

Mr. GEOFFREY B. TAYLOR has been appointed a director of Rhymney Engineering Company, Limited, in place of Mr. W. MESSER, who has retired. Rhymney Engineering is a subsidiary of Powell Duffryn, Limited.

Mr. D. L. BONNELL has been appointed representative in South Wales, Somerset and Gloucestershire for the Hymatic Engineering Company, Limited, manufacturers of air compressors, Redditch, Worcestershire.

Mr. K. A. SMITH, assistant sales manager to the Clayton Dewandre Company, Limited, leaves at the end of this month. He has formed his own company, Ken Smith (Trailers), Limited, Halesowen, near Birmingham.

Mr. W. K. G. ALLAN has been elected a director and appointed chairman of William Foster & Company, Limited, general engineers, Wellington Foundry, Lincoln, in succession to Mr. C. V. ARMITAGE, who has retired from the board.

Mr. A. J. SCAMP, J.P., has been appointed a director of F. Perkins, Limited, Peterborough, in order to be associated with the group's personnel and industrial relations activities. He is a corporate member of the Institute of Personnel Management.

Dr. E. W. PARKES, is a newly appointed Professor of Engineering at the University of Leicester. For a number of years he has worked in the aircraft industry. During the last 12 months he has been visiting professor at Stanford University, USA.

Mr. H. A. BARRATT, chief engineer of Wallace & Tiernan, Limited, chemical engineering company of Chiswick, has been appointed to the board of E. C. D. Limited, of Tonbridge, Kent, a subsidiary specializing in pumping and air-conditioning equipment.

Mr. A. C. DOWDING, Mr. R. H. FRENCH and Mr. C. D. HUNTER, directors of Dowding & Doll, Limited, machine-tool manufacturers, London, have been elected directors of Industrial Technics (Southampton), Limited, following its acquisition by Dowding & Doll.

Mr. A. I. BAKER, chairman of the Baker, Perkins group of companies, has accepted the invitation to act as honorary president of the Engineering, Marine, Welding & Nuclear Energy Exhibition, which is to be held at Olympia, London, from April 20 to May 4, 1961.

Mr. A. J. M. HENSHAW, M.A., formerly director and general sales manager, W. C. Holmes & Company, Limited, Turnbridge, Huddersfield, has been appointed assistant managing director. Mr. B. J. DUNCAN, who has been appointed sales manager, was previously field sales manager.

Mr. ROBERT ATKINSON, managing director of William Doxford & Sons (Engineers), Limited, has been released from his contract with the company so that he can take up the appointment of managing director of the engineering division of Tube Investments, Limited, as from March 1.

Mr. DEREK R. R. DICK, a partner in W. S. Atkins & Partners, Limited, consulting engineers, has been seconded to Richard Thomas & Baldwins, Limited, to work as construction manager at the Spencer works, the integrated iron and steel plant now being built at Llanwern, near Newport, Monmouthshire.

Mr. ARTHUR W. WILLIAMS, personal assistant to the works' director at James Booth Aluminium, Limited, Birmingham, for two years, has been appointed chief technical representative in charge of the company's technical sales service department, as part of the general re-organization of the sales staff.

Formerly general manager of Charles Hill & Company, Limited, Birmingham, Mr. W. S. C. BRYANT has been appointed general manager of the company which will be formed to operate the new Rootes Group project in Scotland. Mr. D. G. M. HANNAY, former general manager of Kern Trinidad Oilfields, has been appointed secretary of the new company.

Mr. N. A. MATHESON has been appointed engineer-in-chief to the Mersey Docks and Harbour Board to succeed Mr. J. D. SANER who retires at the end of the year. Mr. Matheson, who is a member of the Institution of Civil Engineers and the Institution of Mechanical Engineers, has served at Aberdeen, the Isle of Man, Greenock, Dundee and Bristol.

Mr. and Mrs. EDGAR DULLEA have celebrated their golden wedding. Mr. Dullea was apprenticed with Day, Summers & Company, as an iron moulder and worked for the firm for many years. Later he spent two years with John I. Thornycroft & Company, Limited, before obtaining the post of foundry foreman with a Stroud firm from which he retired eight years ago.

Dr. J. E. HILLIARD, of the research laboratory, General Electric Company, Schenectady, USA, is to give a lecture on "Metallurgical Research at High Pressures," under the auspices of the metal physics committee of the Institute of Metals. The meeting will take place at the Institute's headquarters, 17, Belgrave Square, London, S.W.1, on Thursday, January 12, 1961, at 6.30 p.m.

Mr. CECIL HURST, deputy chairman of Samuel Osborn & Company, Limited, Sheffield, and Mr. J. E. Robson, the firm's London director, have returned from a week's visit to Israel. They visited Engineers Tool Manufacturing Company, at Herzlia, near Tel Aviv, which is controlled by Samuel Osborn and of which Mr. Hurst is chairman. The company was formed in 1953 and another section is to be added to the factory. Samuel Osborn is also to take a minority interest in an Israel firm for the manufacture of files for which plant is being installed in an existing building.

News in Brief

THE DAILY MAIL IDEAL HOME EXHIBITION OF 1961 is to be held, at Olympia, London, from March 7 to April 3.

FIRTH BROWN TOOLS, LIMITED, Sheffield, are carrying out extensions to their premises in Savile Street and Norroy Street to provide 40,000 sq. ft. of additional floor space at a cost of £150,000.

MIDLAND SILICONES, LIMITED, announce an immediate reduction of 5s. per lb. in the price of DP 2403 self-adhering silicone rubber. Reductions of up to 10 per cent. have already been announced for 15 other grades of silicone rubber.

AT THE INDUSTRIAL PHOTOGRAPHIC AND TELEVISION EXHIBITION now being held at the Royal Albert Hall, London (closing November 25), such applications as radiography, closed circuit television and underwater television will be demonstrated.

KESTNER EVAPORATOR & ENGINEERING COMPANY, LIMITED, London, have received an order for two evaporators for concentrating an acid electrolyte liquor. These evaporators, which are of Monel-metal, will form part of a complete installation, for the continuous production of tinned steel-strip at the Ebbw Vale Works of Richard Thomas & Baldwins, Limited.

THE CAMBRIDGE INSTRUMENT COMPANY, LIMITED, announce the despatch of a scanning electron-probe X-ray microanalyser to the Illinois Institute of Technology, Chicago. It is to be followed by two others for the United States Steel Corporation and the Crucible Steel Company of America. Each is valued at about £18,000.

Mr. Leslie Davies, managing director of the Eagle Foundry Company, Ladywood, Birmingham, has presented gold watches to three employees whose total service is 101 years—Mr. W. JAMES, Mr. J. DEAKIN and Mr. I. DAVIES. Mr. James recently retired as foundry manager after 40 years. He was succeeded by Mr. Deakin, who has been with the firm 33 years. Mr. Davies is a moulder and has been with the firm 28 years.

DESOUTTER BROTHERS (HOLDINGS), LIMITED, announce the formation of a new subsidiary—Carter Stevens (Automation), Limited—to carry on the businesses of Carter Stevens & Company (Engineering), Carter Stevens & Company (Automation), and Blakeman Designs, all of Coventry. Desoutter Brothers (Holdings) will subscribe 76 per cent. of the issued share capital, which in the first instance will be in the region of £50,000.

FOLLOWING A RECOMMENDATION by the Joint British Committee for Vacuum Science and Technology, the Council of the Institution of Mechanical Engineers have agreed to sponsor a symposium of papers on user experience of large-scale industrial vacuum plant, to be held at the Institution on March 1 and 2, 1961. The main objective of the symposium is to bring together designers and users of vacuum plant to discuss their problems and techniques.

"THE STEETLEY STORY," a new documentary film on the work of the Steetley Company, Limited—one of the largest producers of refractories in Western Europe and the Commonwealth—was screened for the first time in London this month. A feature of the film is the showing of the sea-water magnesia plant at Hartlepool where refractory magnesia is made from dolomite and sea-water. The plant is claimed to be the largest of its kind in the world.

COLIN STEWART, LIMITED, Wharton Hall, Winsford, Cheshire, announce arrangements have now been concluded for the transfer of control of the White Sand Silica Company, Limited, to British Industrial Sand, Limited, Redhill, Surrey, and in consequence of this arrangement all inquiries for ground silica and ground quartz should now be addressed to Redhill. Colin Stewart's emphasize that they are continuing in business for the many other commodities which they supply.

THE COLORADO SCHOOL OF MINES, Golden, Colorado, is to be featured in the United States Information Agency film "Higher Education in the United States." This film is intended to answer a successful series of pictures produced by the University of Moscow, illustrating the educational opportunities available in Russia. Five other schools included in the scheme are Harvard University, University of Pittsburgh, California Institute of Technology, and Goucher and Wittenberg colleges.

Mr. JOSEPH RICHARDS, chairman of Wombwell Foundry & Engineering, Limited, near Barnsley, has stated that they have been in full production for some time now. His forecast of an upward trend in trading activities has materialized, though the concern's profit increase would have been greater if the improvement had taken place at the beginning of the year instead of halfway through. If trading conditions continue as at present, there will be a further improvement in profits next year.

INTERNATIONAL NICKEL COMPANY OF CANADA, LIMITED, is to proceed immediately with the expansion of its iron-ore recovery plant at Copper Cliff, Ontario, thereby tripling its capacity. The expanded plant will treat 1,070,000 tons per year of nickeliferous pyrrhotite high in iron content. In the iron-ore recovery plant, capacity for the output of iron-ore pellets containing 68 per cent. iron, will be raised to 800,000 tons per year and more nickel will be recovered from the same amount of pyrrhotite than is now possible in the nickel smelter. The plant, scheduled to be in full operation in 1963, will entail a total estimated capital outlay of $50,000,000, of which up to $10,000,000 is scheduled for 1961.

FOR THE FIRST TIME IN ITS HISTORY the Villiers Engineering Company, of Wolverhampton, which has manufactured petrol engines for half a century, is to enter the oil engine market. A new diesel engine is about to go into production as part of the company's £2,000,000 expansion programme for the next two years. A spokesman for the company said that Villiers believe there is a great export potential in the D.270, a small capacity diesel with a high power to weight ratio, and that in the Middle East and the Near East it is hoped to establish a substantial market.

THE KENWOOD GROUP, makers of domestic electric appliances, have completed new premises at Berry Hill, Droitwich, to accommodate a number of departments and associated companies which have previously been at Friar Street, Droitwich. The new premises will house Kenwood Electrics, Limited (Midland and South Wales area) and the associated companies of Peerless and Ericsson, Limited, and Dishwasher (London), Limited. There is an office block, a service workshop and a warehouse with an area of 6,000 sq. ft. This will be the national distribution centre. Further expansion eventually is envisaged.

DISTILLERS COMPANY, LIMITED, chemical group, has decided to set up an overseas division which will be responsible for Distillers' overseas chemical interests. Dr. H. K. Whalley, formerly division director in charge of development, will head the overseas division,

News in Brief

and will be assisted by Mr. P. L. Bramwyche. In Australia, D.C.L. has a 40 per cent. interest in C.S.R. Chemicals (Pty.) Limited, Sydney, owned in partnership with the Colonial Sugar Refining Company Limited, and in South Africa, the company has an interest of just under 50 per cent. in National Chemical Products Limited, Germiston, Transvaal.

MOVING NEXT YEAR to premises in Broad Street, Birmingham, is the Engineering Centre, Birmingham, which claims to house the only permanent comprehensive engineering exhibition in Britain. The Centre is to take over the £200,000 Masonic Temple building on to which it is planned to build a four-storey extension. This will mean that the Centre, of which Mr. Anthony J. Cox is general manager, can expand its exhibition floor area for light and medium engineering firms. Mr. Banks said that some 5,000 firms take advantage of the information services provided by the Centre. Work on the new premises is expected to be completed by the autumn of 1961.

THE FIRST PART of the third congress of the European Federation of Chemical Engineering will be held in London from June 20 to 26, 1962, on the occasion of the Chemical and Petroleum Engineering Exhibition at Olympia. The major event in the programme is a three-day meeting organized by the Institution of Chemical Engineers on the subject: "Interaction between Fluids and Particles." Suggestions for papers for inclusion in the programme are invited. Offers or requests for further information should be sent to the general secretary, Institution of Chemical Engineers, 16, Belgrave Square, London, S.W.1, as soon as possible and not later than April 30, 1961.

W. P. BUTTERFIELD, LIMITED, engineers, Shipley, Yorkshire, recently held their fourteenth annual sales conference at the Craiglands Hotel, Ilkley. Mr. R. H. Butterfield, joint managing director, presided and welcomed directors of a number of associate companies within the Butterfield Group who were at the conference for the first time—Bradley & Company, Limited, Globe Tank and Foundry (Wolverhampton), Limited, General Galvanisers, Limited, Weston Works, Limited, and Swintex, Limited. In addition to those present at the conference, the dinner was attended by Mr. A. J. Butterley, chairman, and Mr. J. K. Williamson and Mr. G. P. Mosby, directors

Mr. DAVID DEUTSCH, production executive of Amalgamated Film Distributors, was the guest speaker at the luncheon of the Non-Ferrous Club, held at the Queen's Hotel, Birmingham on November 2, his subject being the motion picture industry today and tomorrow. At the meeting, the president, Mr. Peter Mould, reminded the club of the death recently of Mr. Geoff. Litherland and announced that a cheque for 50 guineas had been sent to the British Empire Cancer Campaign. Members were also reminded that the annual dinner/dance would be held as usual at the Chadwick Manor Hotel, on December 2, and members wishing to attend should apply early for tickets.

FOUNDRY EQUIPMENT, LIMITED, announce that Mr. F. J. Cross, of 19, Penns Court, Penns Lane, Sutton Coldfield, Warwicks (telephone: Ashfield 2121), has been appointed Midlands area sales engineer covering the counties of Shropshire, Staffordshire, Warwickshire and Worcestershire. He is area representative also for Cleanair, Limited, and Conveyor & Shotblast, Limited. The company also announces that Hill Porter (Newcastle), Limited, "G" Pit, Wallsend-on-Tyne, Northumberland (telephone: 624002), have been appointed North East area agents, covering the counties of Cumberland, Durham, Northumberland, Westmorland, North Riding of Yorkshire, Barrow-in-Furness area, with Mr. C. P. Mazucchi as F.E. representative operating from the same address.

A NEW FACTORY for Holman-Iberica S.A. was recently opened at Pinto, near Madrid, by Mr. P. M. Holman, chairman of Holman Brothers, Limited, founders and engineers, of Camborne, Cornwall. Holman-Iberica was formed in 1957 by Holman's with their Spanish agents, Maclaurin Morrison y Cia S.A. and the latter company's associates, the Siberex Group. The company has already progressed to a point where greatly increased sales of the group's products in the Iberian Peninsula are evident. Initial production was concentrated on air-compressors; the first, with a capacity of 120 cu. ft. per in., and powered by a Barreiros diesel engine of wholly Spanish manufacture, was completed in July last year. Though built from drawings and patterns supplied from Camborne, all components except the valve-assemblies were manufactured in Spain.

AT THE ANNUAL GENERAL MEETING in Birmingham on November 9 of the Midland Region of the Council of British Manufacturers of Petroleum Equipment, Mr. H. F. S. Gedge was elected to serve as Midland Regional chairman for a third year and Mr. R. G. Lewis was elected secretary. Addressing members Mr. J. M. Storey, chairman of the Council, said that Britain would be well advised to offer more attractive export credit terms to overseas customers to match the terms available in certain other countries. Although the Board of Trade was now encouraging the Export Credits Guarantee Department to give longer terms, perhaps five to eight years, the United States and the Continent offered much longer credit. He thought it essential that terms should be improved for the benefit of smaller manufacturers who were experiencing difficulty in negotiating long-term credits for overseas customers. Mr. Storey added that the special credit scheme which his Council established two years ago was recording a big success and in only 18 months the special subsidiary created to run the scheme had attracted business from Mexico worth about £7,500,000. He welcomed the creation of the new European Export Council on the lines of the Dollar Export Council.

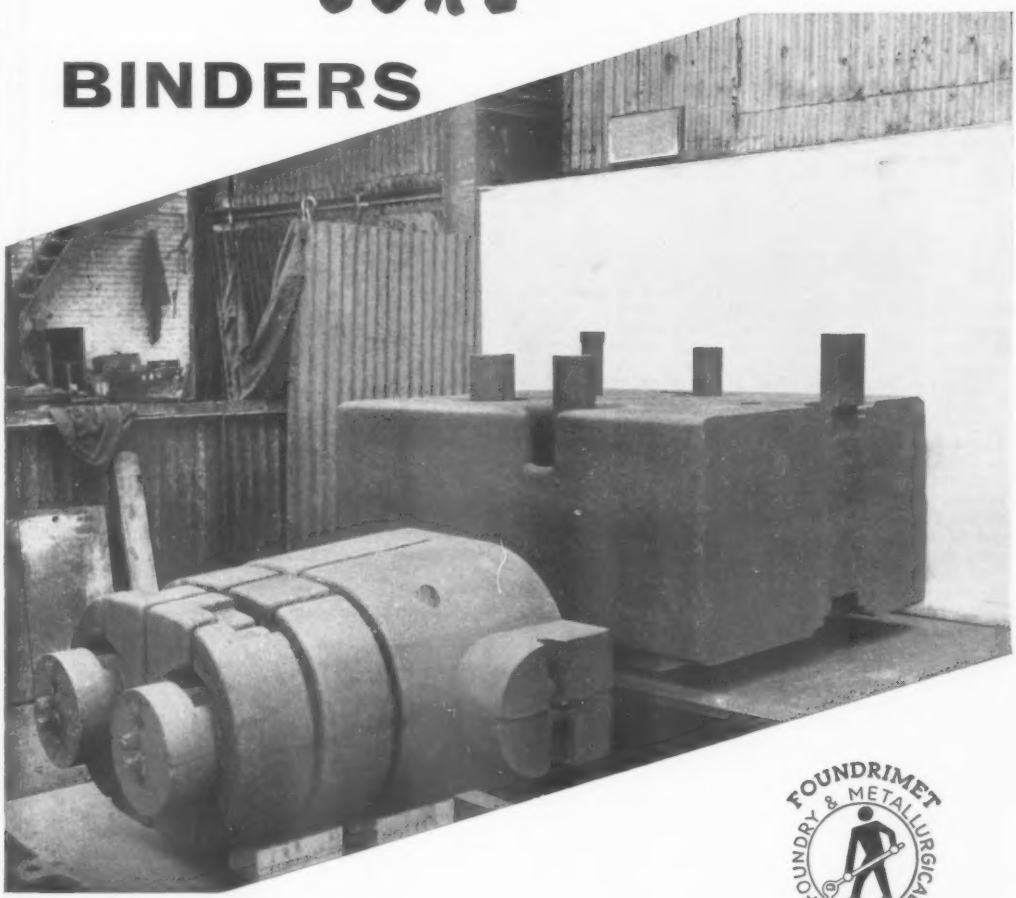
Obituary

Dr. ROBERT WILLIAM LAWSON, lecturer in physics for 36 years at Sheffield University, has died. He had retired in 1956. His interpretation of Einstein's theory of relativity, which was the first simple explanation of the theory, was widely used.

The death has occurred, at the age of 75, of Mr. W. G. NAYLOR, who had been with the Staveley Coal & Iron Company, for 39 years in an official capacity. From 1932, until his retirement 10 years ago, he was advertising manager for Cast Iron Pipes.

The death at the age of 26 is announced from Paris of Second-Lieutenant FRANCIS HÉNON, who was killed in an ambush in Algeria. He was a chevalier of the Legion of Honour, and the holder of the Cross for Military Valour with palm. By profession he was a chartered engineer and spent one of his vacations working at K. & L. (Steelfounders & Engineers), Limited, Letchworth. His father, Mr. Guy Hénon, is well known in international foundry circles.

SUPINOL CORE BINDERS



Photograph of cores weighing approx. 35 cwts by courtesy of Seagers Ltd. Dartford.

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Company News

INTERNATIONAL NICKEL COMPANY OF CANADA, LIMITED—Quarterly dividend is raised to a record of 40 (US) cents from the 37½ cents rate paid for the three previous quarters.

W. P. BUTTERFIELD, LIMITED—In view of the results so far known, the interim dividend is raised from 5 per cent. to 5½ per cent. on account of the year ending March 31, 1961.

JOHN I. THORNYCROFT & COMPANY, LIMITED—Group net loss of £6,700 was incurred in the year ended July 31, 1960, compared with a loss of £65,214. The dividend is maintained at 6 per cent.

RALEIGH INDUSTRIES, LIMITED—Net profit of the company, which is a subsidiary of Tube Investments, Limited, for the year ended July 31, 1960, was £905,370 (£831,817), after tax of £1,099,888 (£890,750).

BRITISH PRESSURE DIE-CASTINGS, LIMITED—Second interim of 7½ per cent.—the minimum forecast when the newly created shares were placed last July—makes 12½ per cent. for the year ended October 31, 1960.

SIMON ENGINEERING, LIMITED—The directors have declared an interim dividend on the 15,021,102 ordinary shares of 5s. each at the rate of 10 per cent., less tax, in respect of 1960, as forecast at the time of the merger.

SAMUEL OSBORNE & COMPANY, LIMITED, makers of special steels, etc., of Sheffield—Final dividend of 25 per cent. makes 35 (27½) per cent. for the year ended July 31, 1960. Net profit rose from £535,361 to £706,591, after tax of £869,716 (£600,140).

ROBERT HUDSON, LIMITED, manufacturers of light railway equipment, of Leeds—Net balance for the year ended June 30, 1960, was £167,802 (£279,660), after tax of £144,500 (£219,500). Final dividend of 8½ per cent. makes 15 per cent., against 16¾ per cent. forecast.

HARDYPICK, LIMITED—The offer of Laycock Engineering, Limited, to acquire the company has been accepted by the holders of 88 per cent. of the preference shares and 95 per cent. of the ordinary shares. Both offers have been declared unconditional, but remain open for late acceptances.

JOHN HOLROYD & COMPANY, LIMITED, gear manufacturers, bronze founders, etc., of Rochdale—A final dividend of 10 per cent. makes 15 per cent. for the year to September 30, 1960, against the previous year's single payment of 10 per cent. Group profit increased from £347,542 to £419,462.

BROOM & WADE, LIMITED, makers of air compressors, pneumatic tools, etc., of High Wycombe (Bucks)—The dividend is effectively raised by 7½ per cent. to 22½ per cent. with a final of 17½ per cent. Group profits, before tax, expanded to £1,044,922 (£851,858) and the net profit is £497,314, compared with £435,923.

HALE & HALE (TIPTON), LIMITED, blackheart malleable ironfounders—Final dividend of 15 per cent. maintains 20 per cent. for the year ended August 4, 1960. Group net profit was £19,680 (£26,219), after tax of £10,959 (£22,100). Last year there was a 60 per cent. cash distribution from capital profits.

HEENAN & FROUDE, LIMITED, manufacturing engineers, of Worcester—Dividend is effectively raised by 1½ per cent. to the equivalent of 11½ per cent. with a final of 8 per cent., as forecast, on a capital increased by a 50 per cent. scrip issue. Group net profit for the year ended September 3, 1960 was £282,748 (£258,880), after tax of £281,639 (£262,589).

CRANE, LIMITED, manufacturers of pipe-line materials, of London, E.C.4—All the ordinary capital of Rhodes Brydon & Youatt, Limited, pump manufacturers, etc., of Stockport (Ches), and its wholly-owned subsidiary, Furnival & Company, Limited, guillotine makers, of Stockport, has been acquired. It is intended to continue and expand the present range of products.

CRABTREE ELECTRICAL INDUSTRIES, LIMITED—Final dividend of 8¾ per cent. on a capital doubled by a scrip issue makes the equivalent of 12½ (10) per cent. for the year ended July 31, 1960. A final dividend of not less than 7½ per cent. was forecast. Group trading profit increased from £454,698 to £557,334, but after tax of £248,471 (£169,685) and other heavier charges, the net profit was lower at £206,063 (£222,752).

GEORGE COHEN 600 GROUP, LIMITED—The company is to raise £3,000,000 by an issue of 5,000,000 5s. ordinary shares at 12s. each on a two-for-five basis to holders of November 1. The directors estimate that, subject to no unforeseen circumstances, the profits for the current year should be nearly the same as those for the previous year, in which event they will feel justified in maintaining the 13 per cent. total dividend.

WOLVERHAMPTON DIE-CASTING COMPANY, LIMITED—Group net profit for the year ended June 30, 1960, rose to £123,143 from £93,324, after tax of £98,217 (£85,245). A final dividend of 25 per cent. makes 35 (30) per cent. for the year. Acceptances in respect of 60 per cent. of the shares have been received in response to the recent offer of a share exchange for the ordinary capital of British Pressure Die Castings, Limited.

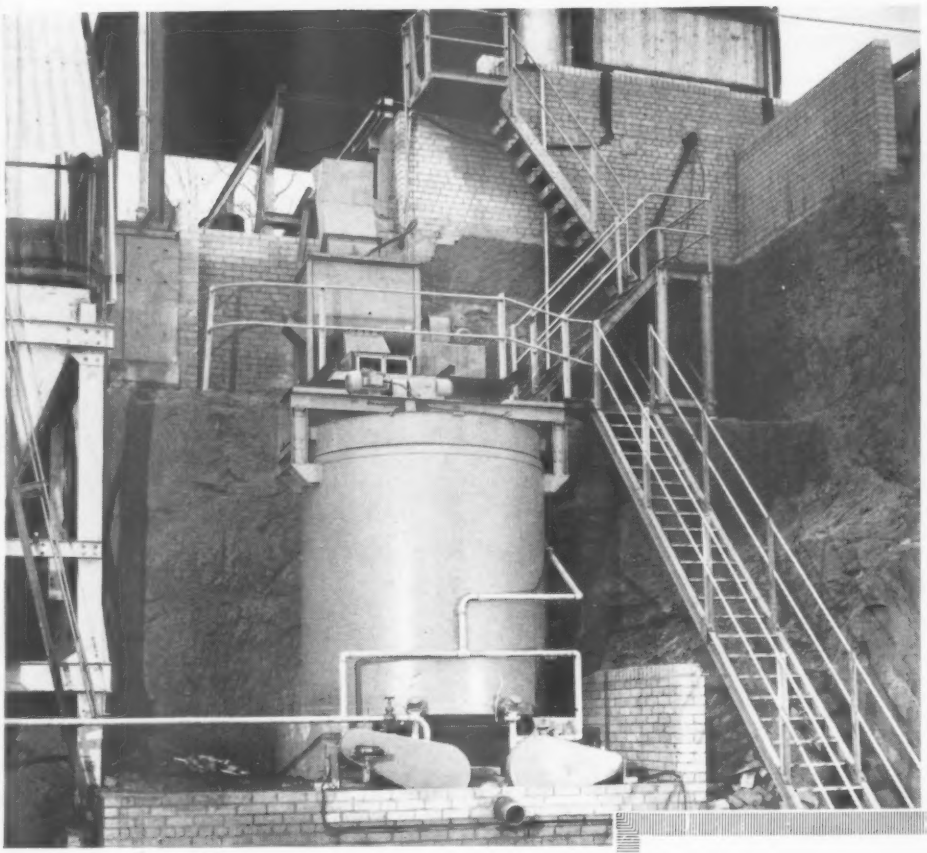
COCHRAN & COMPANY, ANNAN, LIMITED, engineers and boilermakers—The chairman, Mr. Robert Adeane, states that, due to advances in design, the company has increased its share of the available market both at home and overseas. In certain countries consideration is being given to the problem of local construction and an agreement to manufacture Cochran boilers has just been signed with Wright Boag & Head Wrightson (Ptv), Limited, South Africa.

CHAMBERLIN & HILL, LIMITED, ironfounders, of Walsall (Staffs)—Turnover for the half-year to September 30 has been higher than that of the corresponding period of last year, the board states. The foundries are fully occupied and orders in hand should ensure the continuance of the high rate for the next three months. The interim dividend is raised to 7½ (6½) per cent. The increase has been made to equalize the two payments and does not indicate an increased total for the year.

RANSOME & MARLES BEARING COMPANY, LIMITED—Group net profit for the year ended June 30, 1960, was £836,910 (£609,396). The dividend is raised from 17½ per cent. to 21 per cent. and it is proposed to make a one-for-two scrip issue. The Board of Trade has approved a further extension to the Annfield Plain factory. The extension is being built to requirements and the company is purchasing this together with the land and existing factory for some £900,000 amortized over 15 years.

MIDLAND ALUMINIUM, LIMITED—Progress has been made in connection with seeking opportunities to develop present activities of the group and to broaden its base still further by expanding into other allied spheres. The board feels that opportunities may arise for acquiring suitable businesses on a share exchange basis and consequently consider that the ordinary capital should be increased to £1,000,000 by the creation of 1,660,000 ordinary 5s. shares to be available for issue when necessary.

LAPORTE INDUSTRIES, LIMITED—All the issued capital of Cupola Mining & Milling Company, Limited, has been bought for an undisclosed sum from Head, Wrightson & Company, Limited. The company intends to meet the rising demand for acid grade fluorspar by expanding production at the company's flotation plant at Stoney (Derbyshire), which has recently been installed by Head Wrightson. The operations of Cupola will be integrated with those of Glebe Mines' Limited.



Baker Perkins Foundry Machinery at work... *at Mansfield Standard Sand Co. Ltd.*

This Clay Slurry Plant was built at Mansfield by Baker Perkins. Clay is added to standard sand in quantities which vary to suit the foundry customer concerned. The plant includes a Simplex Mixer, a storage tank, a vibratory screen (to remove oversize material) and pumps. An immersion heater prevents winter freezing. This is one of the many examples of machinery for the foundry and allied industries by Baker Perkins—the firm that supplies the complete range.

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Engineers

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HISTORICAL NOTE

Mansfield Standard Sand Company has been supplying Foundries for one and a quarter centuries and is the sole producer of Mansfield Moulding Sand—known throughout these islands and the world over for its 'standard' quality.

The Company is now producing a new range of 'standards' by blending natural sands to give constant strength and a choice of several controlled permeabilities.

Metallurgical Training in South Africa

Future foundrymen may be confronted by the somewhat unusual sight of professors of metallurgy in the melting shops, if a suggestion by South African author, Mr. C. E. Mavrocordatos, B.MET., F.I.M., M.I.B.F., acting head, Department of Metallurgy, University of the Witwatersrand, is adopted. In presenting a paper to the South African Institute of Mining and Metallurgy entitled "Some Thoughts and Reflections on the Training of Metallurgists," he said that the academic staff of any university was often criticized on the score that, as their length of service as teachers increased, so their ideas of industrial realities became obsolete. To remedy this defect he suggested that each member of staff should work for two holiday months every two years, at an industrial establishment best fitted to his line of specialization. No compulsion should be exercized, but he was confident that the members of staff themselves would appreciate the importance of such an arrangement, and be eager to develop and adopt such a scheme.

Mr. Mavrocordatos claimed that metallurgists control very important industrial activities and it could be said, without much fear of contradition, that they are the very focal point of modern progress. The jet engine would still be a curiosity had the metallurgist not developed the special alloys which are able to withstand stresses at the high operative temperatures involved.

The metallurgist, said Mr. Mavrocordatos, needs both chemistry and physics if he is to master the intricacies of all branches of his profession. Chemistry is essential for his rôle as an ore dresser and a smelter and refiner of metal. Solid-state physics is the foundation required for that branch of metallurgy dealing with mechanical operation of shaping metals, and the various heat-treating operations necessary for imparting to metals and alloys the mechanical properties desired by the design engineer.

Metallurgical Posts

The author pointed out that the average number of metallurgists graduating each year over the past five years from the Witwatersrand University, was five, the majority being absorbed by the metallurgical division of the mining industry. Every year there were at least 15 requests from industry for metallurgists. In his opinion local industry was seriously hampered due to the lack of suitable personnel for further developments of the potentialities of the industry.

Specialization

He urged specialization in the fields of mining metallurgy and the heavy- and light-metallurgical engineering fields. It was proposed that the student of metallurgy should receive a uniform training up to the third year of studies. At the third year the student should express his preference for one of two options: extractive or industrial metallurgy. Uniform training on the basic principles of both branches would continue to be given, but students should also follow a higher course in the science fundamental to the branch of their preference. Thus those who would proceed to the extractive metallurgy course should follow a higher course in chemistry specially adapted to their needs and those who would pursue specialization in industrial metallurgy should follow a special course in solid-state physics.

In the fourth year of studies the real separation and specialization in the two fields of metallurgical activities should take place. In this, the final year, particular subjects which had already been taught in the third year at a more or less general and elementary level, should be carried to a more advanced and more detailed level. Other auxiliary subjects peculiar to the two branches should also be taught concurrently with systematic practical work. The author then dealt with publicity to obtain more students, adequate grants for research purposes and the provision of scholarships.

Discussion

The president of the South African branch of the Institute of British Foundrymen, Mr. D. Gordon Jones, congratulated the author on his stimulating paper. He said, however, that he disagreed with the suggestion that a student should, in his third year, be made to choose his career. He recoiled at the very mention of specialization in a university course. Metallurgy, he said, was an applied science, and thus science was brought to bear on the solution of a particular line of industrial problems. It followed, therefore, that the essential ingredient of a course was a good grounding in science. In past years many metallurgists had graduated in pure science and absorbed their metallurgy by direct contact with industry. To-day there were numerous examples of physicists who had become noted metallurgists.

In his reply to the discussion, Mr. Mavrocordatos agreed that there were arguments for and against specialization, but what he advocated was that a fundamental training on as broad a base as possible should be acquired at a university, with a view to the field in which the student would eventually find his employment.

New Patents

(Copies of complete specifications are obtainable from the Patent Office, Sales Branch, 25, Southampton Buildings, Chancery Lane, London, W.C.2, price 3s. 6d.)

821,720. Mo Och Domsjo A.B., Ornskoldsvik, Sweden.

Production of cores or moulds by the CO_2 Process. A water-soluble silicate, and at least one additional water-soluble binder in the form of a cellulose derivative are added to core or mould sand (at the rate of 0.5 to 5 parts by weight of each to 100 parts of sand). Cores or moulds are formed from this mixture which is subjected to action of CO_2. This causes decomposition of the silicate, thus solidifying the mixture. This company's co-pending Patent, No. 821,782, claims the inclusion of sodium metalsilicate and ethyl-hydroxyethylcellulose, in the mixture.

821,788. Allmanna Svenska/Elektriska, A.B., Sweden.

Improved vacuum-furnace plant which is stated to take up less space than conventional types. The characterizing feature of this invention is that the chill tank is a stationary vertical cylinder and the furnace tank is a stationary horizontal cylinder. The side of the furnace facing the chill tank is cylindrically concave viewed from the outside with its axis substantially parallel to the axis of the chill tank and with a radius of curvature at least as large as the cylindrical surface of the chill tank.

822,533. General Electric Company Inc., 1 River Road, Schenectady 5, New York State, USA.

The object of this Patent is to provide an apparatus for casting grain-oriented, columnar ingots which do not require the application of external heat before or during the casting and solidification of the ingot.

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Raw Material Markets

Iron and Steel

The increasing short-time working and redundancy in the motor car industry continues to reduce the usage of castings. Current delivery schedules reflect the extent of the change, and this in turn has caused some of the foundries to go on a four-day week. Efforts are being made by some of the foundries affected to secure orders for castings from other trades.

Good demands for high duty castings continue to be made by the machine-tool makers, the heavy engineering trades, power and electrical plant manufacturers, steelworks, and other trades. The engineering and speciality foundries are able to obtain all the pig-iron they need and the low phosphorus irons chiefly in demand by them are in adequate supply, while those needing hematite and refined irons are able to obtain all the supplies they require.

Good demands for castings continue to come from the building trades and the light foundries supplying these are fairly well employed. The light foundries, particularly those catering for the domestic utensil trade, have capacity to spare, and much more work than is at present forthcoming is needed to keep them fully employed. The jobbing and textile foundries are also fairly well engaged but could undertake more work. The high phosphorus irons used by these foundries and also some of the engineering foundries are plentiful. Producers have tonnages to spare in stock and from current outputs, and the consignments which continue to be sent overeas relieve them of some of this excess.

The foundries continue to be able to obtain most of their scrap supplies without difficulty, apart from special qualities. Foundry coke deliveries are maintained, and no difficulty is experienced in obtaining the required supplies of ganister, limestone, and firebricks.

The re-rollers continue to obtain outputs to the extent of the labour available which at many units is below requirements. Good demands are maintained for small bars and light sections, and reinforcing rods are in heavy request. Most of the mills have adequate supplies of steel semis available in the mild steel grades, as fairly good stocks are still held by them and home steelworks continue to send forward substantial tonnages against current orders. The shortage of carbon and alloy steel billets has not yet been overcome.

Non-ferrous Metals

Copper in London has developed a firm undertone and indications are that the price will now go higher rather than lower before the year is out. In fact, a deal of bear covering has been taking place and activity on the London market is brisk. It is far from clear why the market should be in such health, but it is now assumed that the stocks in LME warehouses are in firm hands, bears seem prepared to cover large tonnages on any change of market sentiment.

There are, however, some slightly encouraging signs elsewhere. UMK has raised its price by 70 points to 28.10 cents a pound, New York or Antwerp, and the US price structure is holding at its present level despite the fact that overproduction in the United States continues.

Stocks in LME warehouses at the end of last week totalled 12,322 tons, an increase of 1,114 tons on the week.

Tin, after a short spell of weakness, seems to have recovered. The general belief is that prices will go higher and that the upward trend will be apparent in the not too distant future. This comment is supported by the recent estimate that the deficit of tin metal this year will be of the order of 10,000-15,000 tons. Demand is satisfactory on both sides of the Atlantic and the Eastern market is steadying up. Last week it became known that the Malayan Government was prepared to ratify the new tin agreement but there is no news from other producer countries.

In the US the price is relatively steady at $1.03 cents a pound. Stocks of tin in LME warehouses were unchanged at the end of last week and amount to 9,223 tons.

Lead is trying to go better in London but buying is as yet too sporadic to allow this to be realized. In the US the market is quiet and the price unchanged at 12 cents a pound.

Zinc, too, is showing a better undertone but this market requires more consistency of consumer interest before it will go ahead much further. In the US the price is holding steady at 13 cents a pound.

Forthcoming Events

NOVEMBER 28

Institution of Production Engineers

Manchester section:—"Machine-tool Development as seen at Olympia, 1960," by N. Stubbs, 7.15 p.m., at Reynolds Hall, Manchester College of Science & Technology.

NOVEMBER 30

Institute of Vitreous Enamellers

Southern section:—"Enamelling Aspects of Nickel Dip," by N. S. C. Millar, 7.15 p.m., at the Constitutional Club, Northumberland Avenue, London, W.C.2.

Institution of Production Engineers

Shrewsbury section:—"Recent Developments in High-production Foundries," by J. D. Berry, 7.30 p.m., at the Walker Technical College, Oakengates.

Institution of Mechanical Engineers

London graduates section:—"Design of the N.P.L. Standard Hardness Test Machines," by F. C. P. Mason, 7 p.m., at the Wimbledon Technical College, Gladstone Road, S.W.19.

DECEMBER 1

Society of Chemical Industry

"Influence of Water Movement on Corrosion: (*a*) Ferrous Materials and (*b*) Non-ferrous Metals," by G. Butler and N. V. Nowlan, 2 p.m. and 3.45 p.m., at the Empire Restaurant, Olympia.

Institute of British Foundrymen

London branch:—"Origin, Detection and Elimination of Gases in Cast Metals," by Dr. D. V. Atterton, 6.30 p.m., at 17, Belgrave Square, London, S.W.1. Joint meeting with the Institute of Metals.

Wales & Monmouth branch:—"Uncooled Basic Cupola," by B. R. Douglas, at Newport. (Details from secretary.)

DECEMBER 3

Institute of British Foundrymen

East Midlands branch:—"Consistent Cupola Operation," by R. Jelley, 6 p.m., at the College of Arts, Derby.

Mr. JOHN RANNIE, shipyard director of John Brown & Company (Clydebank), Limited, has been elected president of the Shipbuilding Employers' Federation. Mr. R. CYRIL THOMPSON, chairman of Joseph L. Thompson & Sons, Limited, has been appointed senior vice-president, and other vice-presidents are Dr. DENIS REBBECK, deputy managing director of Harland & Wolff, Limited, Belfast, and Mr. HENRY ROBB, chairman and managing director of Henry Robb, Limited, Leith.

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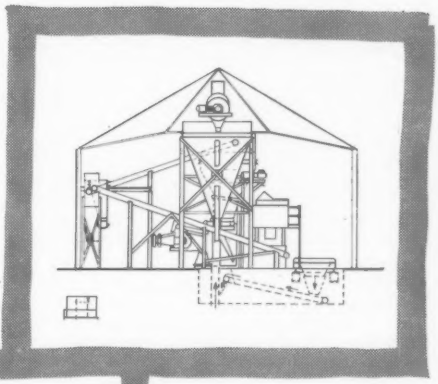

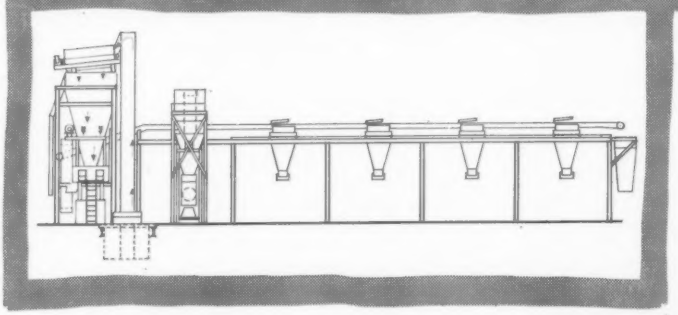

FOUNDRY PLANT BY Richards

Richards Structural Steel Co. Ltd., Phoenix Iron Works, Leicester 61237

Current Prices of Iron, Steel, and Non-ferrous Metals

(Delivered unless otherwise stated)

November 23, 1960

PIG-IRON

Foundry Iron.—No. 3 IRON, CLASS 2, 10-ton lots or over: Middlesbrough, £21 6s. 0d.; Birmingham, £20 18s. 3d.

Low-phosphorus Iron.—Over 0.10 to 0.40 per cent. P, 10-ton lots or over, £23 5s. 0d., delivered Birmingham, £23 10s. 0d., delivered Grangemouth.

Cylinder and Refined Irons.—North Zone, £25 6s. 6d.; South Zone, £25 9s. 0d.

Refined Malleable.—P, 0.10 per cent. max.; North Zone, £26 6d. 6d.; South Zone, £26 9s. 0d.

Hematite.—Si up to 2 per cent., S. & P. over 0.03 to 0.05 per cent., 10-ton lots or over; N.-E. of England (local iron), £23 19s. 0d.; Scotland (Scotch iron), Zone S.1, £24 5s. 6d.; Sheffield, £25 7s. 6d.; Birmingham, £25 14s. 0d.; Wales (Welsh iron), £23 19s. 0d.

Basic Pig-iron.—£20 3s. 0d., delivered Staffs, Derbyshire, Notts, Lincs, Rutland, Northants, and Leicestershire in 10-ton lots or over.

FERRO-ALLOYS

(per ton unless otherwise stated, delivered)

Ferro-Silicon (6-ton lots and over).—45 per cent. Si, £43 10s. 0d. to £46 0s. 0d., scale 15s. 0d. per unit, lumpy. 75 per cent. Si, £59 0s. 0d. to £63 10s. 0d., scale 15s. 0d. per unit, lumpy.

Ferro-vanadium.—50/60 per cent., 20s. 6d. per lb. of V;

Ferro-molybdenum.—65/70 per cent., carbon-free, 12s. 10d. per lb. of Mo.

Ferro-titanium.—20/25 per cent., 2-3 per cent. Cu, £250 0s. 0d.; 38/40 per cent., commercially carbon-free, £287 0s. 0d.

Ferro-tungsten.—80/85 per cent., 11s. 8d. per lb. of W.

Tungsten Metal Powder.—98/99 per cent., 14s. 8d. per lb. of W.

Ferro-chrome (6-ton lots and over, lumpy).—4/6 per cent. C, £81 10s. 0d. to £84 10s. 0d., basis 60 per cent. Cr. scale 27s. 0d. to 28s. 6d. per unit; over 6 per cent. C, £79 0s. 0d. to £82 10s. 0d., basis 60 per cent. Cr, scale, 27s. 0d. to 28s. 6d. per unit; 2 per cent. C,* 1s. 8d. to 1s. 11d. per lb. Cr; 1 per cent. C,* 1s. 8d. to 1s. 11½d. per lb. Cr; 0.15 per cent. C,* 1s. 9½d. to 2s. 0½d. per lb. Cr; 0.10 per cent. C,* 1s. 9¾d. to 2s. 0¾d. per lb. Cr; 0.06 per cent. C,* 1s. 11d. to 2s. 1d. per lb. Cr.

Metallic Chromium.—98/99 per cent., 6s. 10d. per lb.

Metallic Manganese.—94/96 per cent., carbon-free, £275 0s. 0d.; 96/98 per cent., £285 0s. 0d.

Ferro-columbium.—65/67 per cent., Cb + Ta, 19s. 9d. per lb., Cb + Ta.

Ferro-manganese (Standard).—78 per cent., £61 10s. 0d.

SEMI-FINISHED STEEL

Re-rolling Billets, Blooms, and Slabs.—BASIC: Soft u.t., 100 tons & over, £31 15s. 6d.; tested, 0.08 to 0.33 per cent. C, 6 to 35 tons, £33 15s. 6d.; hard (0.41 to 0.60 per cent. C), under 10 tons, £34 17s. 0d.; silico-manganese, under 10 tons, £43 16s. 6d.; free-cutting, under 10 tons, £36 14s. 6d SIEMENS MARTIN ACID (under 10 tons): Up to 0.25 per cent. C, £41 1s. 0d.; silico-manganese, £44 4s. 0d.

Billets, Blooms, and Slabs for Forging and for Stamping under 10 tons).—BASIC: soft, up to 0.33 per cent. C, £38 10s. 0d.; basic, hard, over 0.41 up to 0.60 per cent. C £39 12s. 6d.; acid, up to 0.25 per cent. C, £43 4s. 0d.

FINISHED STEEL

Heavy Plates and Sections (1 ton to 10 tons).—Ship plate (N.-E. Coast), £41 12s. 0d.; boiler plates (N.-E. Coast), £44 2s. 0d.; floor plates (N.-E. Coast), £43 10s. 0d.; angles (N.-E. Coast), £38 16s. 6d.; joists (N.-E. Coast), £38 12s. 6d.

Small Bars, Sheets, etc.—Rounds and squares, under 3 in., and flats 5 in. wide and under, untested soft basic, 50 tons and over, £39 1s. 0d.; under 10 tons to 4 tons, £40 18s. 0d.; under 4 tons to 2 tons, £41 3s. 0d.; hoop and strip, coils, 100 tons and over, £38 0s. 0d.; uncoated strip mill coils, hot rolled, under 3 mm. to 12g., 25 tons to under 50 tons, £43 16s. 0d.; black sheets (hand mill), 24g., 10 tons and over, £57 14s. 6d.; galvanized corrugated sheets, 24g., 10 tons and over, £68 5s. 0d.

Alloy Steel Bars.—1 in. dia. and up: Nickel, £67 17s. 0d.; nickel-chrome, £98 11s. 0d.; nickel-chrome-molybdenum, £111 4s. 0d., in lots of 5 tons to under 10 tons.

NON-FERROUS METALS

Copper.—Cash, £229 15s. 0d. to £230 0s. 0d.; three months, £227 15s. 0d. to £228 0s. 0d.; settlement, £230 0s. 0d.

Copper, Tubes, etc.—Solid-drawn tubes, 2s. 2½d. per lb.; rods, 240s. 6d. per cwt. basis; 20 s.w.g., 275s. 0d. per cwt.

Tin.—Cash, £801 10s. 0d. to £802 0s. 0d.; three months, £797 10s. 0d. to £798 0s. 0d.; settlement, £802 0s. 0d.

Lead (Refined Pig).—Second half November, £67 12s. 6d. to £67 17s. 6d.; second half February, £68 10s. 0d. to £68 12s. 6d.

Zinc.—Second half November, £87 15s. 0d. to £88 0s. 0d.; second half February, £87 7s. 6d. to £87 10s. 0d.

Zinc Sheets, etc.—Sheets, 15g. and thicker, all English destinations, £123 7s. 6d.; rolled zinc (boiler plates), all English destinations, £121 2s. 6d.; zinc oxide (Red Seal) d/d buyers' premises, £100 0s. 0d.

Brass Tubes, etc.—Solid-drawn tubes, 1s. 10d. per lb.; sheets to 10 w.g., 199s. 6d. per cwt.; wire, 2s. 8¼d.; rolled metal, 199s. 6d. per cwt.

Brass (Brazing).—BS1400, B3, £174; B6, £226.

Brass (High Tensile).—BS1400, HTB1, £194; HTB2 £213; HTB3, £232.

Gunmetal.—BS1400, LG2, £218; LG3, £228; G1, 1%, £290; G1, 1%, £281.

Phosphor Bronze.—BS1400, PB1 (AID released), £311; BS1400, 90/10/1, £299.

Leaded Phosphor Bronze.—BS1400, LPB1, £239.

Phosphor Bronze Strip, etc.—Strip, 284s. 3d. per cwt.; wire, 4s. 0¼d. per lb.; rods, 3s. 3¼d.; tubes, 3s. 3¼d.; chill cast bars, solids 3s. 3d.; cored 3s. 4d (CHARLES CLIFFORD, LIMITED).

Nickel Silver, etc.—Rolled metal, 3 in. to 9 in. wide × 0.056, 3s. 10d. per lb.; round wire, 10g. in coils (10 per cent.), 4s. 3d.; special quality turning rod, 10 per cent., ½ in. dia., in straight lengths, 4s. 2d. All prices are net.

Other Metals.—Magnesium, ingots, 2s. 2¼d. to 2s. 3d. per lb.; Antimony, English, 99 per cent., £200 0s. 0d. Quicksilver, ex-warehouse, £70 10s. 0d. Nickel, £600 0s. 0d. Aluminium, ingots, £186 0s. 0d.; aluminium bronze (BS1400), AB1, £247. AB2, £255

* Average 68-70 per cent.

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Advertisements (accompanied by a remittance) and replies to Box Numbers should be addressed to the Advertisement Manager, Foundry Trade Journal, John Adam House, 17/19, John Adam Street, Adelphi, London, W.C.2. If received by first post Monday advertisements can normally be accommodated in the following Thursday's issue.

SITUATIONS WANTED

FOUNDRY EXECUTIVE with initiative, drive and determination, combined with first class knowledge of all ferrous and non-ferrous practices. Wide and varied experience in management, i.e. administration, estimating, costing, sales. Well able to accept responsibility and work under pressure. Box FE948, FOUNDRY TRADE JOURNAL.

CHIEF ENGINEER (40), A.M.I.PlantE., A.M.I.B.F., seeks new post. Good experience modern mechanised foundries and machine shops. Installation, maintenance, planning, development, malleable grey iron, steel. Salary £1,500—£2,000. Assistance with housing. Box CE946, FOUNDRY TRADE JOURNAL.

FOUNDRY FOREMAN, A.M.I.B.F., 38, practical and technical trained, requires a position with a progressive firm. Used to full control. Wide range of experience in jobbing and machine moulding in high duty irons. Able to train and control labour. Southern area preferred. Box FF969, FOUNDRY TRADE JOURNAL.

QUALIFIED FOUNDRY METALLURGIST (29), experienced in metallurgical production control for castings in grey iron, whiteheart malleable, stainless and alloy steels, seeks new post, preferably northern England. Present salary £1,250. Box QF968, FOUNDRY TRADE JOURNAL.

FOUNDRY METALLURGIST (23), H.N.C. Metallurgy, very experienced in grey iron, blackheart and whiteheart malleable, desires change to similar position or as assistant foundry manager. Any progressive firm in the country considered including Scotland. Box FM970, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT

STEEL FOUNDRY METHODS ENGINEER required for fully mechanised foundry. Applications are invited from experienced men to fill a permanent staff position. Write, stating age, experience and salary required, to JOHN FOWLER & Co. (LEEDS), LTD., Sprotborough Foundry, Doncaster.

SITUATIONS VACANT—*contd.*

FOUNDRY FOREMAN required for Iron Foundry in Hertfordshire. Practical man with experience in high-quality castings produced by machine, plate and floor methods up to 2 tons individual weight. Box FR930, FOUNDRY TRADE JOURNAL.

TECHNICAL ENGINEER for Lancashire and Yorkshire required by well-known established British manufacturer of moulding machines, sand plant, cleaning equipment, cupola plant, etc. Applications invited from men having the practical knowledge necessary for the satisfactory sale and servicing of such equipment. Write giving details of experience and salary required to Box TE939, FOUNDRY TRADE JOURNAL.

MOULDER. Practical, capable man for supervisory position in West Yorkshire Foundry producing grey iron up to 15 tons. Progressive position with excellent prospects of advancement. Full details required of experience and salaries earned to Box MP966, FOUNDRY TRADE JOURNAL.

FOUNDRY FOREMAN. Practical man required for Yorkshire Iron Foundry producing castings up to 12 tons. Exceptional Prospects for well trained/man capable of accepting responsibility. Applications should give full particulars of past experience and state salary required to Box FF967, FOUNDRY TRADE JOURNAL.

EXPERIENCED ESTIMATOR and Rate Fixer required for Ferrous and Non-Ferrous Foundries. Preferably with knowledge of Work Study. Apply, giving details of age, experience, and salary required, to: Personnel Manager, KENT ALLOYS, LIMITED, Temple Manor Works, Strood, Rochester, Kent.

CASTING INSPECTOR wanted for Foundry in West Riding. Knowledge of Pattern Making and Foundry Methods. Able to read drawings and use normal inspection instruments. Apply Box CI960, FOUNDRY TRADE JOURNAL.

FOUNDRY FOREMAN required for Foundry in the West Riding. Age 25-40. Must have knowledge of Rate Fixing, Metal Melting and gating and feeding of castings. Must be clean and methodical in his methods and tactful in his approach to labour. Good wages and bonus paid. Apply Box FF961, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT—*contd.*

STEEL FOUNDRY in North of England requires ESTIMATOR, capable of extracting weights from drawings, and knowledge of Methods an advantage. This is a staff appointment. Write stating age, experience and salary required to Box SF949, FOUNDRY TRADE JOURNAL.

PLANNING ENGINEER required for expanding Company in the Midlands producing small pressed parts. This is an excellent opportunity for a man with initiative and enthusiasm. Commencing salary in the range of £1,000 to £1,250 depending on experience and qualifications —Box PE956, FOUNDRY TRADE JOURNAL.

ASSISTANT FOREMAN for up to date Aluminium Gravity Diecasting Foundry. Excellent scope for a younger man with initiative, drive and a keen sense of discipline. Please state age, experience and salary required.—Box AF957, FOUNDRY TRADE JOURNAL.

FOUNDRY FOREMAN wanted for progressive position in the Iron Foundry of a Machine Tool Works situated in the West Riding of Yorkshire. Applicants must have practical experience on Grey Iron castings of 2 tons upwards. Please give full particulars including present salary in strict confidence to Box FF953 FOUNDRY TRADE JOURNAL.

MANAGER required for Vitreous Enamelling Shop handling a variety of Cast Iron and Sheet Iron products. Applicants should have experience in control and management of labour. State age, details of technical experience and salary expected. Box MR952, FOUNDRY TRADE JOURNAL.

ASSISTANT TO FOUNDRY MANAGER required by Malleable Foundry in South Africa. Must have sound knowledge of Malleable Foundry practice. Good salary and contract offered to right man. British personnel already on our staff. Box AT950, FOUNDRY TRADE JOURNAL.

METAL PATTERNMAKER required by Malleable Foundry in South Africa. Must be good all-round man with working knowledge of Malleable Foundry practice. Good salary and contract offered to right man. British personnel already on our staff. Box MP951, FOUNDRY TRADE JOURNAL.

STEEL FOUNDRY in North of England requires ESTIMATOR, capable of extracting weights from drawings, and knowledge of Methods an advantage. This is a staff appointment. Write stating age, experience and salary required to Box SF958, FOUNDRY TRADE JOURNAL.

TECHNICAL REPRESENTATIVE required by Foundry Suppliers for the Midland Area of England. Applicants should be between 25 and 35 years old (younger may be considered) of sound education with practical foundry and core shop experience. Starting salary £750 p.a. with bonuses and expenses. Car provided. Opportunity of rapid progress. Box TR964, FOUNDRY TRADE JOURNAL.

PRODUCTION MANAGER

Required for small Birmingham firm engaged in light engineering based on jobbing non-ferrous foundry. Hard work. Good prospects. For further particulars apply to Birmingham Productivity Association Technical Advisory Service Limited, 75, Harborne Road, Edgbaston, Birmingham. 15. Telephone EDGbaston, 5778 & 5779, quoting reference, 1514/PM

SITUATIONS VACANT—*contd.*

NATIONAL FOUNDRY COLLEGE WOLVERHAMPTON

THE Governors of the College invite applications for the post of LECTURER. A University Degree or its equivalent is essential and qualifications in Management would be a distinct advantage. Candidates should have had a sound training in the Foundry Industry with experience in Foundry Management, Methods and Planning.

The salary will be in accordance with the Burnham Scale (£1,370—£1,550).

Full particulars may be obtained from the CLERK TO THE GOVERNORS, Education Offices, North Street, Wolverhampton.

EXPERIENCED MAN, aged 30-45 years, required to take charge of section of Foundry making grey iron castings up to 12 tons and some non-ferrous using both floor moulding and mechanised plant. Applicant must have both Foundry and Pattern Shop experience and be able to control and teach labour. This is a progressive and permanent appointment with pension scheme. Applicants to send particulars of experience and present salary to PERSONNEL MANAGER, GWYNNES PUMPS LTD., Firth Road, Lincoln.

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YOUNG Foundry Technician with experience in jobbing and mechanisation required for a Belgium Foundry to start as ASSISTANT MANAGER. Initiative and ability is essential, as after a suitable period of adaptation the position of Manager will become available. Write stating full qualifications and experience to Box YF954, FOUNDRY TRADE JOURNAL.

SALES REPRESENTATIVE. Large engineering concern in the West of Scotland area requires a young energetic sales representative to promote the sale of iron and steel castings in the open market. Applicants should be fully conversant with all aspects of Iron and Steel Founding and have had previous sales experience in this field. Salary will be awarded in accordance with qualifications and experience. Apply Box SR963, FOUNDRY TRADE JOURNAL.

TECHNICAL SALES REPRESENTATIVES required, one for Scotland and one for South Yorkshire and Lincolnshire. Age up to 35 years and resident in area concerned. Must be capable of making practical demonstrations of Core Binders. Cold-setting Binders, also Precoated Sand for shell moulding and shell core making. Company car, pension scheme, expenses and commission provided. Permanent positions for right men. Send details of age, experience and salary required to:—FORDATH ENGINEERING CO. LTD., Hamblet Works, Brandon Way, West Bromwich, Staffs.

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SHOTBLAST PLANT: Wanted second-hand Centriblast or Wheelabrator, barrel type. Must be in good condition. State full particulars, price and location. Box SP971, FOUNDRY TRADE JOURNAL.

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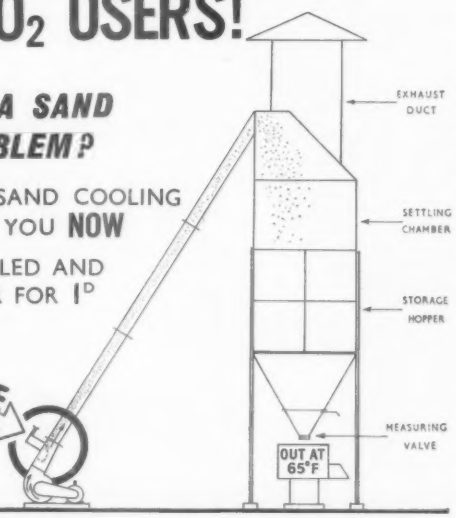

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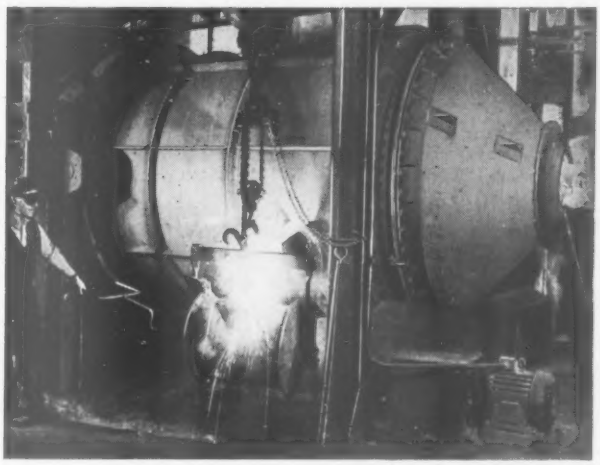

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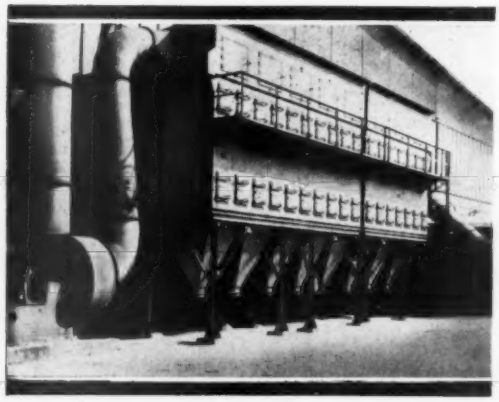

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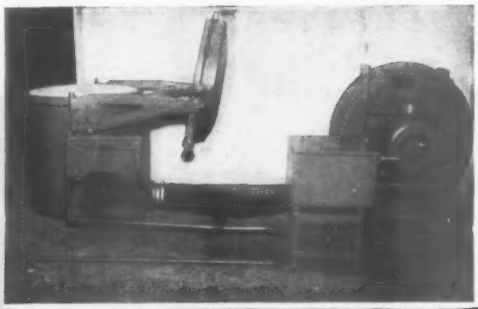

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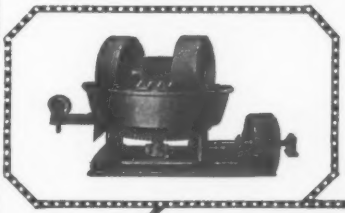

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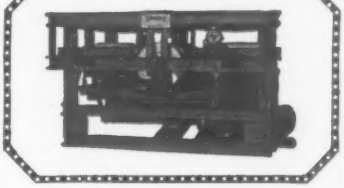

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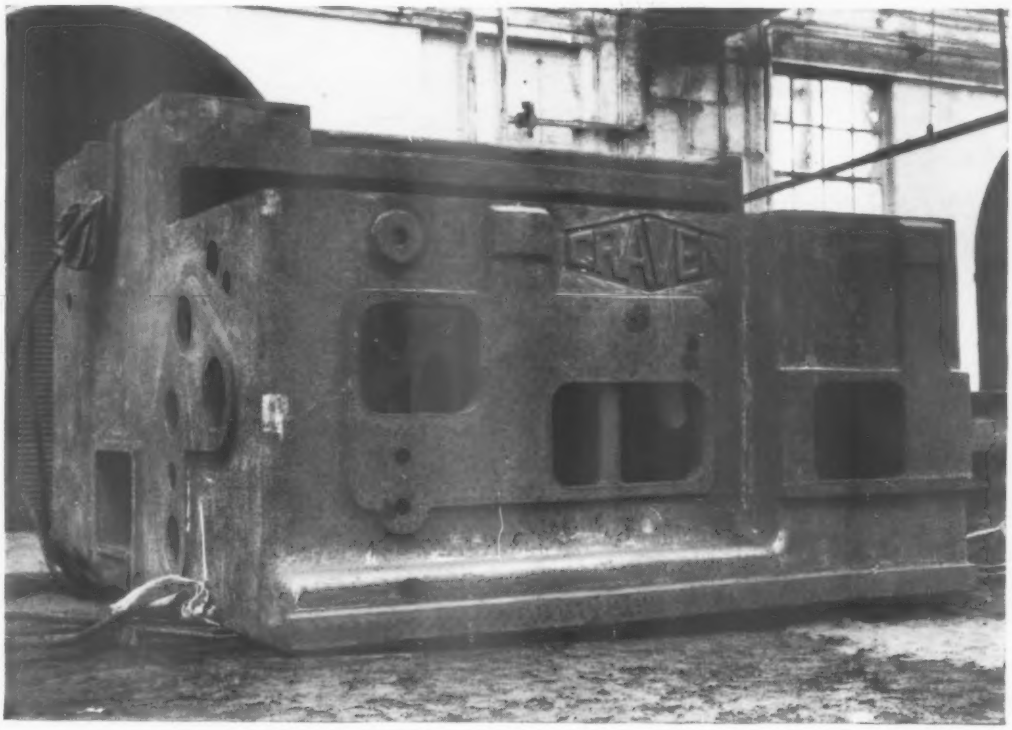

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